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State of California
AIR RESOURCES BOARD

PUBLIC MEETING TO CONSIDER THE APPROVAL OF
THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT'S
1991 CLEAN AIR PLAN

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Staff Report on the
Bay Area Air Quality Management District's 1991 Clean Air Plan

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EXECUTIVE SUMMARY

This report presents the Air Resources Board (ARB or Board) staff analysis of and recommendations on the Bay Area Air Quality Management District's (AQMD or District) 1991 Clean Air Plan (plan).

The plan was adopted by the District on October 30, 1991 and submitted to the Board for review on November 13, 1991. Under state law, ARB must determine the adequacy of each plan within 12 months of receipt. Findings to be made by the Board include: whether applicable control measures have been incorporated, and whether expeditious progress will be made toward attainment of the state standards.

The Bay Area AQMD is nonattainment for four of the state's twelve ambient air quality standards: ozone (1-hour), carbon monoxide (8-hour), and particulate matter (24-hour and annual). The District also experiences visibility problems but, like the rest of the state, is currently unclassified for that standard.

Consistent with state law, the District's plan addresses only ozone and carbon monoxide. Planning for particulate matter and visibility reducing particles has been deferred pending further direction from the State Legislature. However, the strategies contained in the plan are expected to reap benefits for all nonattainment pollutants.

The plan predicts attainment of the state carbon monoxide standard by approximately 1995. No forecast for ozone attainment is provided due to data base and modeling deficiencies. The plan does express the expectation that the federal ozone standard will be attained by 1997, however. The plan also indicates that population exposure to unhealthful ozone levels will be halved by 1994.

The plan includes 50 proposed measures for stationary and area sources. Of these, 21 are to be fully adopted by the end of 1994. Initial action on six other multi-phase measures will be accomplished during the same period.

The plan also contains 23 transportation control measures. Each of these comprise several elements and will be implemented in various stages, by various agencies, throughout the decade. A key exception is the employer-based trip reduction rule scheduled for District adoption in 1992.

The plan incorporates the Board's motor vehicle, fuels, and consumer product regulations. Most of these are reflected in the baseline emission inventory forecast; future measures are discussed in the text of the plan. The ARB measures, along with vehicle turnover, account for approximately 75% of the ozone precursor reductions claimed in the 1987-1994 period. State measures account for almost all of the carbon monoxide emission decreases in that timeframe.

The plan satisfies most of the California Clean Air Act requirements. The applicable control measures for serious and severe nonattainment areas have been incorporated (the self-assigned classifications for carbon monoxide and ozone, respectively). Emission accounting and ranking of measures by cost-effectiveness has been done. Transport mitigation requirements set forth in ARB regulations are met.

The plan will not achieve five percent annual emission reductions for either carbon monoxide, hydrocarbons, or oxides of nitrogen. This is not a legal deficiency, however, if the Board finds that the plan contains all feasible measures and that the District is implementing those measures expeditiously. In staff's view the plan generally meets these tests, with the reservation noted below.

The transportation portion of the plan is a major step forward, yet not as fully developed in some areas as state law requires. Though all aspects of the Act have been addressed, several individual measures lack essential details, implementation milestones, or commitments from responsible agencies. Therefore, the transportation strategies are only partially approvable.

Staff is recommending that the Board approve all elements of the plan found to conform with the California Clean Air Act. This will enable work to proceed on completed elements. Staff is recommending that the remaining portions of the plan be conditionally approved, until such time as the needed changes have been submitted. Schedules for completing plan modifications will be proposed by staff at the public meeting, after consultation with the District and other affected agencies.

The primary issue surrounding the plan is whether it in fact includes all feasible measures. As noted above, the Bay Area must satisfy this test since its plan will not achieve five percent annual emission reductions. "Feasible" is not defined in the Act and must therefore be interpreted by the Board. The interpretation recommended by staff is set forth in the body of this report ("Evaluation of District Plan," Section C.1). A contrary view, advanced by several environmental groups, is set forth in the public comment section. The Board will have to embrace one interpretation of feasibility in order to make the statutorily required findings on this and other district plans.

I. BACKGROUND

A. Development of the District Plan

The California Clean Air Act assigns lead responsibility for plan preparation to each district. In the San Francisco Bay Area, companion legislation directs the Metropolitan Transportation Commission (MTC or Commission) to prepare transportation control measures for inclusion in the District's plan (AB 3791, Cortese; Chapter 1569, Statutes of 1988). The Commission provided those measures to the District in December of 1990.

The Association of Bay Area Governments (ABAG) is not legally obligated to participate under state law. However, ABAG has extensive planning experience, was co-lead for federal air quality planning between 1979 and 1987, and has signed a memorandum of understanding with the District and MTC ensuring continued coordination. ABAG's role in 1991 plan preparation included development of population growth projections and production of the draft plan.

A draft plan was released by the District in April 1991. After a lengthy public comment period and multiple workshops, the plan was substantially amended and re-issued. The final plan was adopted by the District Board, unanimously, on October 30, 1991.

B. Incorporation of State Measures

Although districts bear chief responsibility for writing air quality plans, the contents reflect all actions being taken to reduce air pollution. Efforts of other agencies, changes in the marketplace, changes in societal behavior are all accounted for -- to the extent that they affect emissions.

The Air Resources Board with its comprehensive motor vehicle, fuels, mobile source, and consumer product regulations is a major partner in every plan. The impact of existing state regulations is represented in the baseline emission inventory forecasts for each district. Recently adopted and pending controls are assessed individually and may be discussed in the text of district plans. Controls adopted after District plan adoption but prior to ARB plan approval will be identified in these staff reports and, where appropriate, in the Board's final resolution.

In this instance, ARB regulations and the associated turnover of the vehicle fleet account for most of the claimed ozone precursor reductions before 1994 -- between 85-90%. By 1997, District measures will shift the balance to 60/40 for ozone precursors, with ARB providing the larger share. By the year 2000, the balance will shift back to the state, with ARB measures accounting for 73% of the total decreases in ozone precursors.

State measures account for virtually all of the carbon monoxide reductions between 1987 and 1995 (the projected attainment year).

C. Mandates Governing Plan Review and Approval

The Board has primary responsibility under the Act for overseeing the statewide planning effort. The ARB must review and approve all attainment plans, ensure adequate coordination and consistency between districts' control strategies, monitor implementation, and generally track and enforce compliance with the Act's provisions. The statutes governing plan review contain both procedural and substantive provisions. These are described, in turn, below. All legal citations are for the California Health & Safety Code, unless otherwise specified.

1. Procedural Requirements

District plans were to have been submitted to ARB for review by July 1 of last year (40912). Whether on time or delayed, the Board is given twelve months from receipt of each plan to make its determinations (41503). In this case, a final decision must be rendered by November 13, 1992.

All actions of the Board to approve or disapprove a district's plan must be taken at a noticed public hearing (41503.4), preceded by 45-day written notice (41502). The Board must convene its hearing within the affected air basin, and must conduct its review to include the plans of every district within that basin (41503(b)).

If the Board deems any portion of the plan inadequate, it must notify the district of those deficiencies in writing (41503.2(a)). This action follows the public hearing, since the Board must make those findings absent a delegation to ARB's Executive Officer. The district is required to correct the plan and submit the revision to ARB for approval.

The district may invoke a conflict resolution process if it disagrees with ARB's findings of deficiency (41503.2(b)). The Board is to invoke conflict resolution if the district's plan revisions are still not adequate, in its judgment, to remedy the identified deficiencies. A uniform conflict resolution procedure was developed in May 1990 to guide this process (see Appendix A).

Ultimately, ARB is required to amend deficient district plans as it finds and determines necessary to comply with the Act (41503.2(c)). Before taking this step, written 45-day notice must be provided and a second hearing must be convened within the affected air basin (ibid).

2. Substantive Requirements

The Board must ensure that district plans comply with the Act and with any applicable provision of the Health & Safety Code (41503.5). Most of the germane sections are in Chapter 10 "District Plans to Attain State Ambient Air Quality Standards," starting with section 40910. However, others are scattered throughout the code (e.g., transportation, indirect sources and area source control measures in sections 40716 and 40717), and some requirements are embedded in the plan review procedures (41503-41503.5).

Some of the more important of the latter requirements are these: the requirement that the combination of plans within an air basin be adequate to attain state standards throughout (41503(b)); the mandate to impose uniform controls for the same emission sources within an air basin, unless the district makes a particular demonstration (ibid); the link to transport mitigation requirements established by the Board (41503(b)); the requirement for all feasible controls where a district is unable to project attainment or is unable to achieve five percent annual emission reductions (41503(d) and 41503.1); and the mandates to attain state standards by the earliest practicable date (41503(a)) and to adopt controls expeditiously (41503.1).

II. EVALUATION OF THE PLAN

A. Technical Foundation and Analyses

1. Emission Inventory

The Act requires that district plans include consideration of emission inventory characteristics, growth patterns affecting emissions, and emission reductions occurring in, or expected to occur in, the district (40913). ARB regulations require that districts use a planning inventory provided by the Board (Title 17, California Code of Regulations [CCR] Sections 70700-70704) for the 1987 emissions baseline and future year forecasts.

Staff believes that the Bay Area plan meets these requirements. The plan describes the District's emission inventory in detail and projects trends based on growth in population, employment, industrial and commercial activity, travel, and energy use. In addition, the ARB-provided emission factors have been used for the 1987 baseline inventory and future year forecasts.

RECOMMENDATION: Approve the emission inventory elements of the Bay Area plan.

2. Air Quality Analysis

The Act requires districts to consider the present and projected maximum pollutant concentrations, and the distribution and frequency of state standard violations (40913). These factors are discussed in the Bay Area plan.

The Act requires that district plans evidence attainment by the earliest practicable date (40913, 41500(a), 41503(a)). The most common methods for making this demonstration are photochemical modeling for ozone, and some sort of proportional roll-back analysis for carbon monoxide. Both depend on adequate data and confidence that the projections are reliable.

The District's plan projects attainment of the state carbon monoxide standard by approximately 1995. The main factors leading to this result are the introduction of wintertime oxygenated fuels and fleet turnover. Staff believes that this assessment is accurate.

The Bay Area AQMD is unable to generate an attainment demonstration for ozone at the present time. The District undertook a considerable effort to apply the Urban Airshed Model using extensive 1989 field studies. ARB staff and computer resources were also dedicated to this effort. Unfortunately, the data base and modeling results were not adequate to support an attainment demonstration. The District is therefore deferring the ozone analysis until more data can be collected.

The law allows attainment demonstrations to be deferred, provided that ARB concurs that projecting an attainment date is impossible (41503(d)). When this occurs, the Board must also determine whether the plan contains every feasible control strategy or measure to ensure progress toward attainment (ibid). The latter requirement is addressed in detail below.

Staff concurs that an attainment demonstration for ozone cannot be provided at the current time. The modeling difficulties experienced by the District were genuine, unavoidable, and cannot be overcome prior to ARB action on the plan. Staff is continuing to work with the District on modeling improvements, to enable future compliance with the attainment demonstration requirement.

RECOMMENDATION: Approve the carbon monoxide attainment projection. Defer action on the ozone attainment demonstration until sufficient data are available to support a photochemical modeling analysis.

3. Presumed Area Classification

The projected attainment dates for carbon monoxide and ozone place the Bay Area AQMD in the serious and severe categories, respectively. The plan presumes the more stringent of the two categories and keys the control strategy accordingly. While reporting both classifications would be more technically correct, staff has no objection to this approach.

RECOMMENDATION: Approve the severe area classification for the Bay Area District.

B. Proposed Control Measures

1. New Source Permitting

The Act requires that severe nonattainment areas adopt a permitting program designed to achieve no net increase in emissions. The program, embodied in a permit rule, applies to all new or modified stationary sources (40920(a)(1)). ARB transport mitigation regulations require the adoption and implementation of a "no net increase" rule by July 1, 1991, in identified upwind districts (see *Other Mandated Elements* below). The Bay Area adopted amendments to its New Source Review rule on July 17, 1991, to comply with these requirements.

RECOMMENDATION: Find the District in compliance with the "no net increase" requirement for new and modified permitted stationary sources.

2. Stationary Source Retrofit Measures

Severe nonattainment areas must consider the application of best available retrofit control technology (BARCT) on all existing sources in the district (40920(a)(1)). BARCT is defined as "*an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source*" (40406). ARB's transport mitigation requirements have a BARCT element as well (see *Other Mandated Elements* below).

The 1987 baseline emission inventory for the Bay Area AQMD includes approximately 2,400 separate facilities, with a total of 18,000 different emission sources (e.g., boilers, combustion units, degreasing tanks, etc.). Retrofitting all of them at once is clearly impossible, hence the District has prioritized its efforts. Emphasis has been placed on emission reduction potential, technological feasibility, and relative cost-effectiveness, with the greatest weight falling on the first factor. This is consistent with statutory direction that priority be placed on expeditious progress towards healthful air (40910).

The plan commits to retrofitting 17 source categories over the next decade. In many cases, this involves revisions to existing rules. In some cases, it involves more than one revision. For example, the improved valve and flanges rule will require leakless valves, improved inspection and maintenance, and a more stringent definition of "leaks." A total of 29 changes have been proposed for the 17 source categories.

Staff has reviewed the proposed control measures and has found them to be generally acceptable.

The most serious concerns staff had after reviewing the draft plan concerned the implementation schedules for proposed rules. Staff was particularly concerned by the schedules for NOx controls on stationary gas turbines and electric power generating boilers. The District responded to those concerns with an expedited schedule for NOx control in the final plan.

RECOMMENDATION: Approve the BARCT proposals.

3. Area Source Controls

The Act requires that all nonattainment areas include provisions to develop area source control programs (40918 et seq). "Area source" is a catch-all category for numerous small sources of pollution; for example, residential water heaters or cans of spray paint. It also includes stationary sources that are too small to be identified individually, and large diffuse sources (like the application of pesticides or cattle feed lots) that have no single emission point.

"Provisions to develop" is a readily met standard for all districts, since they have been regulating area sources for a number of years.

The District has proposed to develop and adopt rules for 28 area source categories over the next decade. In the near term these include control of emissions from residential wood combustion, and improvements to several coating rules (aerospace, wood furniture and cabinents, can and coil, among several others). As with the retrofit measures described above, more than one modification has been proposed for many sources. In aggregate, the District has proposed 51 separate modifications.

Staff has reviewed the proposed measures and has found them to be generally acceptable.

RECOMMENDATION: Find that the plan contains provisions to develop an area source control program.

4. Indirect Source Control

The Act requires all nonattainment areas to include provisions to develop indirect source control (ISC) programs in their plans (40918 et seq; see also 40716 and 40910). Although districts have always had the authority to control indirect emission sources, the specificity of this mandate is new. As a result, districts are placing greater emphasis on ISC programs than they have in the past.

Staff has interpreted the ISC mandate to require, at a minimum, the evaluation of program options, the selection of one or more approaches, and a commitment to a schedule for developing the actual measure or measures.

Staff believes that the Bay Area plan meets these tests. The District is proposing to develop a model ordinance or rule for reducing vehicle trips to and from airports, arenas, universities, residential developments, shopping centers and other major activity centers. The ordinance/rule is scheduled for consideration before the District Board in two parts: 1993 (new facilities) and 1994 (existing facilities).

The Bay Area District is also making an ongoing effort to secure the inclusion of air quality elements in local governments' general plans.

RECOMMENDATION: Find that the District plan contains provisions to develop an indirect source control program.

5. Mobile Source Measures

Most of the legal obligation to regulate mobile sources falls on the Air Resources Board. The ARB has sole authority for setting motor vehicle emission standards and for regulating the composition of vehicle fuels (39002, 39039, 39500). The ARB is also directed to establish standards for off-highway vehicles, construction equipment, farm equipment, utility engines, locomotives and marine vessels (43013, 43018). The latter

responsibility is not exclusive but tends to work out that way, due to the federal waiver provisions and the desirability of statewide uniformity. Statewide mobile source controls are seen as more effective and more efficient in many cases.

Districts and associated agencies generally focus on the use of motor vehicles. In other words, these agencies are striving to reduce the number of trips taken and/or the number of miles driven through the application of transportation control measures (TCMs). The Bay Area's proposed TCMs are discussed in the next section.

Some districts are pursuing local mobile source controls in addition to TCMs. These mobile source controls are intended to complement and enhance the state's programs.

The Bay Area plan contains two such mobile source measures: a citizen complaint program for smoking vehicles; and a fleet rule which would require the use of clean fuel vehicles. The former, scheduled for adoption this year, is patterned after portions of the South Coast's "Cut Smog" program. The fleet rule is proposed for adoption during the next planning cycle (1995-1997).

Staff believes that both measures have merit. However, care needs to be taken with local fleet rules so that double-counting of emission reductions, conflicts with the state's program, and other unintended adverse effects are avoided. Staff is currently working with an ad hoc committee of interested district representatives to fashion a workable approach. The product of this effort should be available in time to meet the Bay Area's proposed schedule.

RECOMMENDATION: Approve the smoking vehicle complaint program. Direct ARB staff to continue working with districts on fleet rules, with the objective of resolving implementation issues prior to the next planning cycle.

6. Transportation Control Measures/System Management

Perhaps the most challenging provisions of the California Clean Air Act are those related to transportation. The Act provides districts with much greater authority and responsibility to mitigate the impact of vehicular source emissions through the use of transportation control measures (TCMs). To meet this charge, districts have had to expand their expertise, break new technical ground, and obtain an unprecedented level of cooperation from the many local, regional and state agencies that are directly responsible for transportation, including city and county governments.

The staff believes that the Bay Area agencies have performed well in this area. The plan represents significant progress in addressing the Act's transportation requirements. However, further improvements in several individual measures are needed before staff can recommend that the Board

find the plan meets all the requirements of the Act. The staff's analysis and recommendations are presented below.

The nature of TCMs is constantly evolving and the mix of implementation responsibilities in the Bay Area, like other urban areas, is incredibly complex. Given this, staff encountered many circumstances during plan review where issues had to be addressed for the first time. Staff recommendations were reached only after extensive thought, dialogue, and analysis. Through these recommendations a number of policy precedents are being proposed for the Board's consideration. Among them are the criteria used to gauge TCM approvability.

Legal Requirements. The Act requires long term nonattainment areas to meet three transportation performance standards. As part of the strategy to reduce pollution from motor vehicles, the plan must indicate how the area will: 1) substantially reduce the rate of increase in passenger vehicle trips and vehicle miles traveled; 2) attain 1.5 passenger vehicle occupancy during weekday commute hours by 1999; and 3) achieve no net increase in vehicle emissions after 1997. All nonattainment areas are required to include reasonably available TCMs in their plans, and those unable to achieve 5% annual emission reductions must include all feasible TCMs (40918 et seq).

Criteria for Approval. Staff defined general criteria for the overall transportation plan and more specific criteria for the proposed measures. For the latter, staff assessed the degree to which the TCMs satisfied both the explicit and implicit requirements of the Act. Stated in the form of questions, the criteria are:

- o Reasonably available TCMs -- has each one of the general control strategies deemed to be reasonably available for transportation sources been addressed in some way? (See below for definition of "reasonably available TCMs.")
- o Reduced rate of growth in trips and trip length -- does the plan contain sufficient TCMs to satisfy this requirement?
- o 1.5 Average Vehicle Occupancy -- does the plan contain sufficient TCMs to achieve an average vehicle occupancy of 1.5 during peak periods by the year 2000?
- o Technical basis for each measure -- will it actually reduce emissions (or slow emission increases) if implemented?
- o Extent of each measure -- is it substantive enough and broad enough to support the finding that reasonably available TCMs have been included in the plan?
- o Definition of each measure -- is it well enough defined so that its implementation can be tracked in the annual progress reports required by the Act?

- o Degree of commitment to each measure -- has the implementing agency accepted responsibility for implementing the measure, and does that agency have adequate legal authority and resources to carry it out?

Staff's assessment of the Bay Area's compliance with transportation performance standards is summarized below. The evaluation of individual TCMs is summarized in Table 1 and presented in more detail in Appendix B.

Reasonably Available TCMs. In previous guidance approved by the Board, staff recommended that "reasonably available TCMs" be interpreted to include six general strategies: 1) an employer-based trip reduction rule; 2) trip reduction rules for other sources (such as universities or entertainment venues); 3) management of parking supply and parking prices; 4) a High Occupancy Vehicle or HOV system plan; 5) a comprehensive transit plan, which also addresses access; and 6) land use strategies to minimize vehicle trips.

Staff believe that these general strategies comprise the universe of "reasonably available" TCMs. They are the most effective TCMs available today and it will take the better part of this decade to design and implement them.

Staff finds that the Bay Area plan addresses all of the TCM categories identified as reasonably available. Trip reduction rules are addressed in TCMs #1, #2 and #16; parking management is addressed in #22; the HOV system is addressed in TCM #8; transit is addressed in TCMs #3-7; and, finally, land-use is addressed in TCMs #18 and #19.

Staff has significant reservations about the specificity of several measures. Thus, while the scope of the TCMs is adequate to satisfy the "all reasonable TCMs" test, more depth is required to find the TCMs fully approvable under the Act (see Table 1 and Appendix B).

Reduced Rate of Growth in Trips and Trip Length. The Metropolitan Transportation Commission (MTC) is predicting a significant decline in the regional growth of vehicle miles traveled (VMT). This is a baseline projection, which is expected to occur even if no additional measures are implemented. Annual VMT growth in the 1990's is forecast at 1.4 percent for each 1 percent growth in population. This compares to an annual VMT growth rate of 2.4 percent in the 1980's. MTC estimates that full implementation of the plan will reduce the VMT growth rate to 1.1 percent. Most of this impact would stem from the proposed pricing measures.

Previous ARB guidance suggested that holding VMT growth rate to the rate of population growth was an appropriate goal and could constitute "a substantial reduction" as required by the Act. In the Bay Area's case, both 1.4 and 1.1 percent growth in VMT represent a substantial reduction over the current growth rate. Staff believes that full implementation of reasonably available TCMs and the downward trend in the VMT growth rate is adequate to

meet this requirement of the Act. During its review of the draft plan, staff suggested that MTC and the District develop a monitoring plan to track the actual growth rate in VMT. That plan has been submitted and is now under review by ARB staff.

1.5 Average Vehicle Occupancy (AVO). As noted above, the Act requires the Bay Area to achieve an AVO of 1.5 during weekday commute hours by 1999. MTC estimates that the plan will increase a.m. peak occupancy from a projected baseline level of 1.43 in 2000 to an average of 1.54 by the same date. Most of this impact is from pricing measures. Without such measures, the Bay Area cannot demonstrate compliance with the 1.5 AVO requirement.

Staff concurs with MTC's assessment that the 1.5 AVO requirement is very difficult to meet and that pricing measures will probably be needed to achieve that ridership level in the Bay Area. However, since neither the District nor MTC possesses adequate legal authority to institute pricing strategies, the AVO demonstration in the plan is theoretical. Staff recommends that the Board withhold full approval of the AVO demonstration until the means of implementation have been identified and stronger commitments to the necessary measures and actions have been made.

No Net Increase in Vehicle Emissions. The baseline emission projections for the Bay Area AQMD indicate a steady decline in motor vehicle emissions through the year 2000. This is in large part due to the combination of ARB vehicle and fuel controls reflected in the plan. Staff believes that this projection, plus the full implementation of reasonably available TCMs, is more than adequate to comply with this requirement.

RECOMMENDATIONS: Find that the plan addresses all reasonably available TCMs, but that further definition is needed for some measures. Approve those TCMs identified in Table 1 that fully comply with the Act's requirements. Conditionally approve those TCMs where further actions are needed to comply with the Act, upon receipt of a commitment from the responsible agency (primarily the District or MTC) to adequately define the measures on an expeditious schedule. It is envisioned that most of these improvements will be commitments to near term actions (in the next 6-12 months). However, a few may require longer timelines.

Note: At the time this staff report was released, staff was meeting with District and MTC representatives to determine if an acceptable schedule to upgrade the incomplete TCMs could be devised by the hearing date. If agreement is reached, the staff will recommend the consensus schedule to the Board as part of its action on the Bay Area plan.

Find that the plan satisfies the requirement for a substantial reduction in the growth rate for trips and trip length. Also find that the plan satisfies the requirement for no net vehicle emission increases after 1997.

ERRATA

TABLE 1, (PAGES 12 THROUGH 15) WERE INADVERTENTLY OMITTED FROM THE STAFF REPORT: "PUBLIC MEETING TO CONSIDER THE APPROVAL OF THE BAY AREA QUALITY MANAGEMENT DISTRICT'S 1991 CLEAN AIR PLAN". PLEASE INSERT BETWEEN PAGES 11 AND 16. WE APOLOGIZE FOR THE INCONVENIENCE.

**Table 1 - Evaluation of Transportation Control Measures in the
Bay Area 1991 Clean Air Plan**

| TCM Strategies | Reasonably Available | Adequately Defined | Resources Committed | ARB Staff Recommendation | Comments |
|--|-------------------------|-----------------------|------------------------|-----------------------------|------------------------|
| 16- Indirect Source Control Program | OK | OK | OK | A | (a)(b) |
| 17- Conduct Public Education | | | | | |
| Phase 1 | OK | OK | OK | A | Support measure |
| Phase 2 | OK | OK | I | CA | Support measure |
| 18- High Density Near Transit | | | | | |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 19- Air Quality Elements for General Plans | | | | | |
| Phase 1 | OK | OK | OK | A | Support measure |
| 20- Conduct Demonstration Projects | | | | | |
| Phase 1 | OK | OK | OK | A | Support measure |
| Phase 2 | OK | OK | I | AC | Support measure |
| 21- Implement Revenue Measures | | | | | |
| Phase 1 | OK | OK | I | AC | (a)(b)(c) |
| Phase 2 | I | I | I | AC | Defer emissions credit |
| 22- Market-Based Measures | | | | | |
| Phase 1 | N/A | I | i | AC | (a)(b)(c) |
| Phase 2 | N/A | I | I | AC | Defer emissions credit |
| 23- Ozone Excess "No Drive Days" (voluntary) | OK | OK | OK | A | Support measure |

Legend:

"OK" = Adequate
 "I" = Incomplete
 "N/A" = Not Applicable

"A" = Approve
 "CA" = Conditional Approval
 "AC" = Accept Commitment

"(a)" = Need data on calculations
 "(b)" = Need data on implementation
 "(c)" = Possible "double-counting"

**Table 1 - Evaluation of Transportation Control Measures in the
Bay Area 1991 Clean Air Plan**

**DESCRIPTION OF CODES USED IN STAFF RECOMMENDATIONS
REGARDING TRANSPORTATION CONTROL MEASURES**

"A" = Full approval based on:

- o Air District has full authority to adopt rule and levy fees to fund implementation of control measure
- o Other agency has made funding or other commitments for full implementation of control measure
- o Control measure is a continuation of existing support activities with identified funding source

"CA" = Conditional approval based on:

- o Air District has an adopted control measure that can only be implemented by another agency
- o Credit for future emission reductions is conditional, based on commitment of resources by other agencies

"AC" = Acceptance of commitment based on:

- o Legal authority to implement control measure does not currently exist
- o Air District and other responsible agencies need to continue development of measure
- o Emission reductions credit is deferred until resource commitments are made to implement measure

**Table 1 - Evaluation of Transportation Control Measures in the
Bay Area 1991 Clean Air Plan**

| TCM Strategies | Reasonably Available | Adequately Defined | Resources Committed | ARB Staff Recommendation | Comments |
|--|-------------------------|-----------------------|------------------------|-----------------------------|----------|
| 1- Expand Employer Assistance Programs | OK | OK | OK | A | (b) |
| 2- Employer-Based Trip Reduction Rule | OK | OK | OK | A | (b) |
| 3- Improve Areawide Transit Service | | | | | |
| Phase 1 | OK | OK | OK | A | (b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 4- Expedite and Expand Regional Rail Service | | | | | |
| Phase 1 | OK | OK | OK | A | (b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 5- Improve Access to Rail and Ferries | | | | | |
| Phase 1 | OK | I | I | CA | (a)(b) |
| Phase 2 | OK | I | I | CA | (a)(b) |
| 6- Improve Intercity Rail Service | | | | | |
| Phase 1 | OK | OK | OK | A | (b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 7- Improve Ferry Service | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 8- Construct Carpool/Bus Lanes on Freeway | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |

Legend:

"OK" = Adequate
 "I" = Incomplete
 "N/A" = Not Applicable

"A" = Approve
 "CA" = Conditional Approval
 "AC" = Accept Commitment

"(a)" = Need data on calculations
 "(b)" = Need data on implementation
 "(c)" = Possible "double-counting"

**Table 1 - Evaluation of Transportation Control Measures in the
Bay Area 1991 Clean Air Plan**

| TCM Strategies | Reasonably Available | Adequately Defined | Resources Committed | ARB Staff Recommendation | Comments |
|--|-------------------------|-----------------------|------------------------|-----------------------------|-----------|
| 9- Improve Bicycle Access and Facilities | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | I | I | CA | (a)(b) |
| 10- Improve Youth Transportation | | | | | |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 11- Install Freeway Travel Operations System | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 12- Improve Arterial Traffic Management | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | OK | I | CA | (a)(b) |
| 13- Transit Use Incentives | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | I | I | CA | (a)(b)(c) |
| 14- Vanpool Liability Insurance | | | | | |
| Phase 1 | OK | OK | OK | A | (b) |
| Phase 2 | OK | I | I | CA | (a)(b)(c) |
| 15- Provide Carpool Incentives | | | | | |
| Phase 1 | OK | OK | OK | A | (a)(b) |
| Phase 2 | OK | I | I | CA | (a)(b)(c) |

Legend: "OK" = Adequate
 "I" = Incomplete
 "N/A" = Not Applicable

"A" = Approve
 "CA" = Conditional Approval
 "AC" = Accept Commitment

"(a)" = Need data on calculations
 "(b)" = Need data on implementation
 "(c)" = Possible "double-counting"

Find that the plan does not currently satisfy the 1.5 AVO requirement, and recognize that a significant amount of time will be needed to either develop additional TCMs or to obtain the needed authority and commitments for pricing measures that are essential to achieving a 1.5 AVO by the year 2000.

7. Miscellaneous Control Measures

The Bay Area plan contains two unique "intermittent control measures." The first of these would encourage citizens to postpone discretionary activities, such as unnecessary trips and noncritical maintenance (mowing or painting) during forecasted ozone episodes. The second measure, aimed at industrial sources, would require curtailment of non-production emission generating work during episode conditions. Examples of such activities include: maintenance coating, repairs of external floating roof seals, uncontrolled soil aeration, and check out of stand-by engines. Industry would also be asked to voluntarily limit all other activity--including production--to the extent they can during ozone episodes.

The voluntary citizens action program was endorsed by the District Board and initiated last year. The voluntary portion of the industrial curtailment program is scheduled for District consideration this year, with the mandatory element following in 1994.

Staff cannot confirm the emission reduction estimates for these measures until some actual experience with the programs is gained. (Note: the District agrees that the effectiveness of these measures is difficult to verify and did not include them in its calculation of average annual emissions reductions.)

Staff believes the intermittent control concept is worthy of investigation and is monitoring the Bay Area's efforts with interest.

RECOMMENDATION: Endorse the investigation of intermittent control strategies in the Bay Area plan. Withhold approval of specific emission reduction claims pending receipt of an acceptable demonstration of their effectiveness.

C. Other Mandated Elements

1. Annual Emission Reductions

The Act states that each plan shall be designed to reduce district-wide emissions by five percent (5%) per year, unless an alternative measure of progress is employed (40914). The District is not proposing an alternative method in the 1991 plan.

The 5% requirement applies to each nonattainment pollutant and to each pollutant precursor covered by the plan. For the Bay Area this includes reactive hydrocarbons, oxides of nitrogen, and carbon monoxide.

A district plan may show a lesser rate of reduction if the district is unable to reduce emissions by 5% per year. However, three conditions must be satisfied before ARB can approve a reduced rate: the Board must concur that the 5% rate is unachievable; the plan must contain all feasible measures; and the District must be pursuing an expeditious adoption schedule (40914(b), 41503.1). The following sections provide a lengthy discussion of these conditions.

ARB regulations require each district to display its emission accounting in a clear and straightforward manner (17 CCR, Sections 70700-70704). The regulations also define the time periods for emission averaging as: 1987-1994, 1995-1997, and 1998-2000. As discussed above, the regulations further require that the state issued inventory be used in district plans.

The combination of state and local measures in the Bay Area plan falls short of mandated emission reductions. Instead, the plan indicates cumulative hydrocarbon reductions of 4% annually through 1994, declining to 3.8% per year in the next reporting period, then dropping to 3.1% between 1998 and 2000. [Note: staff expects all district plans to show a downward trend in annual emission reductions through 2000, as opportunities for large reductions are exhausted and growth pressures outpace vehicle turnover.] For NOx, the District is forecasting 2.6% average annual reductions through 1994, 3.4% per year reductions after 1995, dropping back to 2.8% annual decreases after 1997. For carbon monoxide, the plan shows 4% annual decreases through 1994, 4.5% average annual reductions after 1995, then 3.7% annually after 1997. Forecasts beyond 2000 are not included in the plan.

Staff believes the forecasted emission reductions represent the maximum achievable rate of progress in the Bay Area, given the specific facts and circumstances facing the District. These are described in further detail in the following sections.

RECOMMENDATIONS: Approve the District's emission accounting as consistent with state regulations. Approve the lesser rates of annual emission reductions portrayed in the District's plan as the maximum reductions possible and, as discussed in the next two sections, as reflecting the expeditious adoption of all feasible measures for the Bay Area.

2. All Feasible Measures

As a district unable to achieve 5% annual emission reductions, the Bay Area AQMD must demonstrate to ARB's satisfaction that it has included every feasible measure in its 1991 air quality plan (40914(b)(2) and 41503.1). The District asserts that it has.

The term "feasible" is not defined in the California Clean Air Act. However, related environmental statutes offer useful definitions and substantial precedent. The most relevant of these are the Guidelines issued

to implement the California Environmental Quality Act (CEQA), which define "feasible" as *"capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors"* (14 CCR, Section 15364). Three aspects of this definition bear emphasis: the results orientation, the time parameter, and the consideration of social factors (among several others).

Staff have encouraged all districts to give close consideration to demonstrably achievable measures: the bread and butter regulations that have been successfully adopted and implemented in California. Last March, staff provided a list of stationary and area emission source categories for which regulations were clearly available and effective. The staff list of feasible controls is by no means absolute. Rather, it represents a starting point for each district's analysis. Other measures may exist today which are also feasible. New measures will undoubtedly be added over time as districts' regulatory programs move forward.

The District's plan covers all the listed stationary and area source categories which exist in the San Francisco Bay Area. Current District regulations, plus the proposed measures in the plan, ensure that all of the identified categories will be controlled. The District has 15 additional measures for stationary and area sources in its plan, which it considers to be feasible and necessary for the Bay Area.

Staff's guidance to districts on transportation strategies was to focus on reasonably available TCMs. As discussed above, these are the most effective measures currently available and will take a number of years to successfully implement. Six broad control categories were identified. Three of these were regulatory in nature: employer-based trip reduction rules; management of parking supply and prices; and trip reduction rules for other sources. The other three measures affect the overall transportation system: plans for high occupancy vehicle lanes; comprehensive transit plans; and land use policies.

The Bay Area plan addresses all of the identified transportation control categories. Though staff have concerns with a number of the TCMs (as detailed above and in Appendix B), staff believe the scope of the plan is sufficient to satisfy the Act's feasibility requirements. Where TCMs are deficient, it is for lack of specificity or enforceability--not scope.

The time horizon for gauging feasibility is a decisive factor. Since the Act calls for plan revisions every third year after approval (40925), staff believes the most appropriate horizon is the current planning cycle. Thus, what has and can be accomplished between 1987 and 1994 is the operative question. The District's intentions for future planning cycles are instructive and revealing, but should not form the basis for an "all feasible measures" determination since the plan will inevitably be revised.

Staff interprets "accomplish" to mean adopt or otherwise initiate emission controls. This is because the full effectiveness of many measures will not be realized immediately. For example: industrial source retrofits

take between two and five years, on average, to fully implement; new car standards require a turn-over in the vehicle fleet to achieve maximum reductions.

The Bay Area AQMD is proposing to adopt 26 stationary and area source measures, one mobile source measure, and 4 transportation control measures by the end of 1994. Initial and/or supporting action on 23 other multi-part measures will be undertaken in the same period (funding and legislative authority permitting, for some of the latter).

As mentioned previously, districts unable to achieve 5% annual emission reductions must satisfy two tests: all feasible measures and expeditious adoption. If the current planning cycle is viewed as controlling, the question becomes: "what pace of rulemaking activity is "expeditious" in this timeframe?" Staff believes the determination of expeditious progress is fact-driven and district-specific. Staff further believes that the Bay Area plan satisfies the expeditious adoption test. The rationale for this viewpoint is described below.

The need to consider social factors adds weight to local circumstances. Communities differ and may respond differently to proposed measures. The composition of a particular industry's workforce can produce special issues, as the impacts of proposed controls are being considered. Being different is not automatic grounds for rejecting measures which are commonly, and successfully, applied elsewhere. It is a legitimate factor to consider, however, in the context of what is feasible and how quickly it can be achieved.

Staff believes the District plan sets forth an honest appraisal of what can be accomplished in the near term given the particular setting, history, infrastructure, constituency groups, and popular concerns in the San Francisco Bay Area.

RECOMMENDATION: Find that the District plan includes "all feasible control measures" within the meaning of the Act, and in consideration of the factors affecting the selection of control measures within the Bay Area.

3. Expeditious Progress/Expeditious Adoption

The Act generally requires expeditious progress toward attainment (40910). Where districts are unable to achieve 5% annual emission reductions, the Act also requires "expeditious adoption" of all feasible measures (40914(b) and 41503.1). Staff has construed this to mean a steady pace of rulemaking taking into consideration the difficulty, novelty, and controversy associated with each regulation; procedural requirements imposed by statute for the adoption of regulations (including due process and review of environmental and socio-economic impacts); competing mandates (e.g., toxic air contaminant controls which must be locally adopted within 6 months of ARB approval); and district resources.

What is expeditious varies by district, based on its particular circumstances. The Bay Area AQMD is proposing to adopt 36 stationary and area source measures between 1991 and the end of 1994, about nine per year. This represents a doubling of regulatory activity over the last four years, when four to five measures per year was standard. Twelve of these measures are brand new rules, which typically involve more work than revisions to existing rules. Two measures involve the reduction or elimination of exemptions, which tends to fall hardest on small businesses and provoke significant controversy.

In the same timeframe, the District is proposing to act as lead on four transportation strategies, to assume a primary role for three additional TCM's, and to offer support for six of the remaining measures. All of the former represent "cutting edge" work. Few models are available to emulate, and those that are available are going through shake-down processes of their own.

Many of the individual measures in the District's 1991 plan will require considerable resources to develop. Transportation strategies, inclusive of indirect source review and employer-based trip reduction, are extremely controversial in the Bay Area. Creating a program that is both effective and minimally acceptable to the agencies, businesses and individuals that must carry it out is a great challenge. The market-based strategies require new statutory authority which will take extensive lobbying, negotiations, and coordination to secure. The proposed NOx controls for utility boilers present different difficulties owing to the complexity of powerplants, the need to coordinate equipment replacement with Monterey Bay Unified and San Luis Obispo County (who are also proposing to regulate PG&E), and the high cost of the retrofit technologies.

Though not unique to the Bay Area, procedural requirements are a critical part of the expeditious calculation. In addition to due process requirements (40725-40728), new legislation has imposed further time-consuming procedural steps. Beginning this year, districts with a population of 500,000 or more are required to perform a socio-economic analysis on each regulation prior to adoption (AB 2061, Polanco; Chapter 794, Statutes of 1991). This clearly applies to the Bay Area. Districts' responsibilities for environmental review has gradually expanded over the past ten years, as air quality regulations have raised energy, water, hazardous waste disposal, hazardous material transport, and land-use concerns. It is no longer uncommon to see a full environmental impact report on an individual rule. Staff expects the trend toward broader, more time consuming review to continue.

A significant political and practical issue facing all districts this year is the depth and persistence of California's economic downturn. Though signs of recovery are beginning to emerge, the worst effects are still with us and many expect the pace of recovery to be slow. Districts have to be unusually sensitive during this period, and to consider special compliance schedules or other options to mitigate economic impacts. Costs that were absorbable in the past decade may be temporarily less so, in certain

industries or by certain firms. Responding to these issues as they arise will take additional time and creativity.

RECOMMENDATION: Approve the Bay Area's proposed schedule for rulemaking and related activities as "expeditious" within the meaning of the California Clean Air Act and given the particular circumstances facing the Bay Area District.

4. Cost-Effectiveness Ranking and Determination

The California Clean Air Act requires districts to assess the cost-effectiveness of proposed control measures. Each plan must include a list that ranks measures from the least to the most cost-effective (40922). In addition, each district board must certify that its plan is a cost-effective strategy for attaining state air quality standards, prior to adoption (40913(b)).

The Bay Area AQMD has complied with the cost-effectiveness ranking mandate to the extent possible. Sixty-seven of the plan's 90 proposed controls are ranked in Volume 1 (tables 7a and 7b, page 26). For the remaining 23 measures, there is insufficient information to complete a cost-effectiveness assessment.

Staff believes this partial ranking is adequate to satisfy state law. Cost estimates at the planning stage are often preliminary and incomplete. Unless another district has adopted an identical rule, plan preparers must rely on their experience with comparable rules, vendor literature, and various studies. In some cases, cost data simply does not exist. In others, no method has been developed for quantifying emission impacts.

It is important to emphasize this is merely the first step. As individual rules are taken up for development, detailed data are gathered and more specific cost-effectiveness analyses are performed. This ensures a continuing emphasis on regulatory efficiency, as intended by the Act.

The Bay Area has also made the required cost-effectiveness determination. On October 30, 1991, the District Board certified that the plan is a cost-effective strategy for attaining state standards by the earliest practicable date in Resolution 2050.

RECOMMENDATION: Find the District plan in compliance with the cost-effectiveness requirements.

5. Transport Mitigation

The Act requires district plans to include any transport mitigation requirements established by the Board (40912). In December 1989, ARB identified the Bay Area AQMD as the source of transport into Monterey Bay Unified air district, the San Joaquin Valley, and the Broader Sacramento Area. In August 1990, the Board adopted mitigation regulations which require certain permitting and retrofit actions (17 CCR, Section 70600).

Specifically, the District was required to adopt and implement a no net increase permitting rule by July 1, 1991. In addition, the District must adopt rules representing BARCT for stationary sources that comprise 75% of the 1987 inventories for hydrocarbons and NOx. The BARCT requirement must be met by January 1, 1994.

The plan demonstrates compliance with both requirements. As noted above, a no net increase permitting rule was adopted and implemented on July 17, 1991. For BARCT, the District may be halfway there already. Over the past several years, Bay Area regulations have been focused on stationary sources of hydrocarbons. Consequently, the District believes that most of its existing hydrocarbon rules represent BARCT. Sources covered by these rules represent 85 percent of the stationary source inventory. The District intends to revisit these rules prior to 1994 to ensure that they do in fact achieve the degree of control that currently represents BARCT.

For NOx emissions, the District has proposed new retrofit control measures to meet BARCT requirements. These rules will cover such sources as reciprocating engines, stationary gas turbines, electric power generating boilers, large boilers, steam generators, process heaters, and residential water heaters. These and other sources amount to 83 percent of the 1987 point source inventory. Therefore, adoption of the new NOx control measures will comply with the transport mitigation regulation provided the District adopts the level of control representing BARCT at the time of rulemaking, which it has committed to do.

RECOMMENDATION: Find the District in compliance with the transport mitigation requirements.

6. Population Exposure

Long term nonattainment areas for ozone must address population exposure in their plans. Specifically, each severe area must include sufficient measures to reduce overall population exposure 25%, 40% and 50% by 1994, 1997 and 2000, respectively (40920(a)(4)). The baseline for this analysis is the average level of exposure experienced between 1986-1988.

The District performed a preliminary modeling study to assess the change in exposure over time. Using a combination of conservative and simplifying assumptions, Bay Area concluded that the plan would satisfy or exceed the Act's requirements. The predicted exposure reduction for 1994 ranged from 49-81%, and ranged from 64-94% for the 1997 milestone date.

ARB staff believes that the method used by the District to estimate population exposure is acceptable. Staff is also confident that the analysis is qualitatively correct. However, the underlying photochemical model is not as reliable as it needs to be to draw firm, numerical conclusions. Substituting actual data for some of the assumptions in the analysis would also be highly desirable.

The District is working diligently to improve modeling performance prior to the next plan revision. The District has also committed to revisiting its population exposure analysis, and intends to incorporate daytime population patterns, more modeling results and more refined indoor/outdoor exposure patterns at that time.

RECOMMENDATION: Approve the population exposure analysis as the best information currently available. Recommend that the District revisit this analysis in the next update to the plan.

7. Intrabasin Uniformity

The Act requires that control measures for the same emission sources be uniform throughout the affected air basin to the maximum extent feasible (41503(b)). In the case of the Bay Area AQMD, district boundaries are coterminous with the entire air basin. Hence, uniformity is generally not a problem for stationary and area source control measures.

The uniformity requirement may provoke issues when the District delegates responsibility for TCM implementation to local agencies. As this is done, the District may need to take steps to ensure that local agencies are implementing the measures consistently.

The District proposes to create model ordinances for the proposed employer-based trip reduction and indirect source review measures. As currently conceived, delegees will need to meet certain standards of performance but will have discretion in selecting the compliance method. Staff believes this approach is consistent with the Act's uniformity requirement.

RECOMMENDATION: Find the plan in conformance with the uniformity requirement. Direct the District to monitor the effectiveness of delegated measures in achieving a uniform degree of emissions control.

8. Public Education

The Act requires that all district plans include provisions for public education programs to promote actions which reduce emissions from transportation and area sources (40918). As noted above, the Bay Area has a unique citizen advisory program designed to curb discretionary, air polluting activities during smog episodes. Its inauguration in 1991 drew substantial press coverage and a discernible, positive response from local residents.

The Bay Area also has a public relations campaign to teach people about single occupancy vehicles' impacts, and to direct them towards transportation alternatives. The campaign was started last year; the District is currently seeking funds to continue it on a long term basis.

RECOMMENDATION: Find that the District plan includes provisions for public education.

9. Contingency Measures

The Act requires that contingency measures be included in each district's plan (40915). These are to be implemented upon a finding, by the ARB, that the district is failing to achieve interim goals or to maintain adequate progress toward attainment (41503.3).

As noted above, the Bay Area AQMD is proposing to adopt all feasible measures on an expeditious schedule. Contingency measures are very difficult to define in this context since additional measures are, by definition, infeasible during the current planning cycle.

In lieu of a list of contingency measures, the District is proposing a contingency procedure. To wit: when a plan measure cannot be adopted or implemented (for whatever reason), the District will do everything possible to accelerate the adoption and implementation of subsequent rules. The annual progress reports will detail all efforts made in this regard.

Staff believes a procedural approach is appropriate for districts facing the all feasible measures/expeditious adoption test. However, the generality of the District's proposal leaves much to be desired. At a minimum, an early warning system should be in place so the Bay Area will have a genuine opportunity to accelerate the adoption of other measures.

The District has also committed to an ongoing re-prioritization process. Should measures not in the plan be identified as feasible, capable of achieving significant reductions, and more cost-effective than measures already in the plan, they will be added to the District's annual rulemaking calendar with a priority that reflects their superiority (or inferiority) to measures awaiting adoption.

Staff strongly supports the ongoing assessment of priorities and the addition of new, feasible measures to district plans. The Board may wish to caution the Bay Area, though, that revised schedules which delay or suspend existing commitments need to be handled as plan revisions and submitted to ARB for approval.

RECOMMENDATION: Conceptually approve the procedural approach to contingency measures in the Bay Area plan; seek further detail as to how it will be effectively implemented. Clarify the conditions under which plan revisions are necessary.

10. Environmental Review

The California Environmental Quality Act (CEQA) requires that each project be assessed for potential significant effects on the environment. This mandate applies to air quality plans. The Bay Area AQMD, like several

other urban districts, opted to prepare a full environmental impact report (EIR) on its 1991 plan. (Some districts, particularly rural districts with straightforward and limited control plans, elected to issue negative declarations or mitigated negative declarations, instead.) The final EIR was certified by the District Board on October 30, 1991. Further environmental documentation will be prepared during the adoption process for individual rules and regulations, as necessary.

RECOMMENDATION: Find that the District has met its obligations under CEQA.

III. ENVIRONMENTAL IMPACTS

The ARB's role in evaluating the environmental impact of air quality plans is limited. Under CEQA, districts act as the lead agencies for preparation of environmental documents. The ARB is thus a responsible agency, and, in that capacity, reviews the environmental documents prepared by the districts and makes appropriate findings as required by the Public Resources Code sections 21081 and 21081.6, where applicable.

Staff have reviewed the EIR for the Bay Area 1991 Clean Air Plan and find that it accurately describes the potential environmental impacts of the plan. Staff concurs with the District's findings.

IV. PUBLIC COMMENTS

A. Directed to the District

Public participation in District plan development, refinement and adoption was extensive. Last Spring, the District held eight public workshops which were attended by approximately 300 persons. A total of 53 people testified at the first hearing on the draft plan in July 1991. Prior to final adoption, the District received and responded to 224 comment letters.

At the final hearing on the plan, testimony was presented by 54 speakers. The overwhelming majority of commentators expressed support, though often wanting parts of the plan strengthened. Several speakers also expressed the hope that there would be flexibility in how measures were implemented.

Many witnesses expressed concern about TCMs. Caltrans objected to highways being deemed an indirect source, indicating that current air quality assessment procedures make this redundant. The Building Industry Association argued that residential projects should not be considered an indirect source, either, since they respond to growth pressures rather than create them. The Bay Area Industrial Park Association requested that indirect source measures be withdrawn from consideration entirely.

Several employers and employer groups were concerned about TCM 2, the employer-based trip reduction control measure. The National Association of

Industrial Office Parks sought an exemption for office complexes. Other representatives wanted maximum employer flexibility (e.g., the Business Air Quality Policy Committee).

Considerable support was expressed for market-based control measures by both environmental and business organizations. However, the organization "People of Color for the Environment" urged that the plan be rejected because the pricing measures were financially regressive, and because the impact of other measures on minorities and low-income groups had not been sufficiently analyzed.

The second major area of concern was whether the plan satisfies the Act's performance standards. The Sierra Club Legal Defense Fund urged rejection on the basis that all feasible measures were not included. The American Lung Association urged the Bay Area board to include additional strategies in order to achieve the five percent annual emissions reduction target.

B. Directed to the Air Resources Board

Prior to release of this report, staff received oral and written comments from several environmental groups including: the Coalition for Clean Air, Natural Resources Defense Council, Citizens for a Better Environment (CBE), and the Sierra Club's Legal Defense Fund and San Francisco Bay Chapter.

These groups are uniformly concerned with the quality of TCMs in district plans, particularly those of the Bay Area and South Coast AQMDs. Noting that the motor vehicle inventory is substantially underestimated, these groups argue that transportation measures should receive the greatest attention and priority. These groups find many of the proposed TCMs to be overly general and potentially unenforceable, and believe this is grounds for finding district plans deficient under the "all feasible measures" test of the Act.

The interpretation of feasibility advanced by these groups is an objective standard, applicable to all districts in all circumstances. They would start from a larger list, incorporating any air quality measure proposed, adopted or implemented by anyone, anywhere in the world. All such measures would be presumptively feasible, and districts would bear a heavy burden of proof for excluding them from their plans. As stated in the preceding chapter, staff's list of feasible measures is both preliminary and open-ended so more controls can, and inevitably will, be added over time. There is a fundamental difference between a universal presumption and a case-specific determination, however. Staff recommends that the Board endorse the latter.

These groups' interpretation of feasibility is not bound to the time horizon of the current planning cycle. These groups appreciate that not every measure can be adopted before 1994 (though they have a different opinion about where the dividing line is). However, they see value in

placing longer term measures in the plan--i.e., "tier 2" and "tier 3"--so that districts are thinking ahead, and so that debate over the next plan revision is appropriately shaped. Staff's position is not directly in conflict with this goal. It is not necessary to fail the 1991 plans to get districts to think past 1994. Virtually all of the transportation strategies are geared to the middle-to-long term. Furthermore, ARB's emission accounting regulations require at least a preliminary analysis through the year 2000, so districts, industry, environmental groups, and the public know what lies ahead.

Staff will report and respond to additional comments on the Bay Area plan at the April 30, 1992, hearing.

V. SUMMARY OF STAFF RECOMMENDATIONS

1. Approve the emission inventory elements of the Bay Area plan.
2. Approve the carbon monoxide attainment projection. Defer action on the ozone attainment demonstration until sufficient data area available to support a photochemical modeling analysis.
3. Approve the severe area classification for the Bay Area District.
4. Find the District in compliance with the "no net increase" requirement for new and modified permitted stationary sources.
5. Approve the BARCT proposals.
6. Find that the plan contains provisions to develop an area source control program.
7. Find that the District plan contains provisions to develop an indirect source control program.
8. Approve the smoking vehicle complaint program. Direct ARB staff to continue working with districts on fleet rules, with the objective of resolving implementation issues prior to the next planning cycle.
9. Find that the plan addresses all reasonably available TCMs, but that further definition is needed for some measures. Approve those TCMs identified in Table 1 that fully comply with the Act's requirements. Conditionally approve those TCMs where further actions are needed to comply with the Act, upon receipt of a commitment from the responsible agency (primarily the District or MTC) to adequately define the measures on an expeditious schedule. It is envisioned that most of these improvements will be commitments to near term actions (in the next 6-12 months). However, a few may require longer timelines.

Note: At the time this staff report was released, staff was meeting with District and MTC representatives to determine if an acceptable schedule to upgrade the incomplete TCMs could be devised by the hearing date. If agreement is reached, the staff will recommend the consensus schedule to the Board as part of its action on the Bay Area plan.

Find that the plan satisfies the requirement for a substantial reduction in the growth rate for trips and trip length. Also find that the plan satisfies the requirement for no net vehicle emission increases after 1997.

Find that the plan does not currently satisfy the 1.5 AVO requirement, and recognize that a significant amount of time will be needed to either develop additional TCMs or to obtain the needed authority and commitments for pricing measures that are essential to achieving a 1.5 AVO by the year 2000.

10. Endorse the investigation of intermittent control strategies in the Bay Area plan. Withhold approval of specific emission reduction claims pending receipt of an acceptable demonstration of their effectiveness.
11. Approve the District's emission accounting as consistent with state regulations. Approve the lesser rates of annual emission reductions portrayed in the District's plan as the maximum reductions possible, and as reflecting the expeditious adoption of all feasible measures for the Bay Area.
12. Find that the District plan includes all feasible measures within the meaning of the Act, and in consideration of the factors affecting the selection of control measures within the Bay Area.
13. Approve the Bay Area's proposed schedule for rulemaking and related activities as "expeditious" within the meaning of the California Clean Air Act and given the particular circumstances facing the Bay Area District.
14. Find the District plan in compliance with the cost-effectiveness requirements.
15. Find the District in compliance with the transport mitigation requirements.
16. Approve the population exposure analysis as the best information currently available. Recommend that the District revisit this analysis in the next update to the plan.
17. Find the plan in conformance with the uniformity requirement for regional pollutants. Direct the District to monitor the effectiveness of delegated measures in achieving a uniform degree of emissions control.
18. Find that the District plan includes provisions for public education.
20. Conceptually approve the procedural approach to contingency measures in the Bay Area plan; seek further detail as to how it will be effectively implemented. Clarify the conditions under which plan revisions are necessary.
21. Find that the District has met its obligations under CEQA.

Appendix A

PLAN REVIEW PROTOCOL

Under the California Clean Air Act, the Air Resources Board is responsible for reviewing and approving all district plans. The Act requires that the ARB and districts develop a "uniform conflict resolution procedure" before any district submits a plan for attainment of state standards. ARB is considering the appropriateness of regulation to implement the procedure. Applicable sections of the Act are attached for reference.

It is ARB's intention to address and resolve differences as early in the planning process as possible. The Board will strive to provide clear guidance and communicate its expectations prior to local adoption of plans. The protocol below includes several steps prior to formal conflict resolution to achieve that objective.

Review of Draft Plans

1. Draft plans prepared by districts will be submitted to the ARB's Office of Air Quality Planning and Liaison (OAQPL) as soon as available, but no less than 30 days before the local hearing date.
2. OAQPL and Division staff will communicate comments to the district by telephone, followed by written comments prior to local plan adoption.

Review of Final Plans

1. Districts will submit final plans to OAQPL as soon as possible after local adoption.
2. ARB will evaluate the final plans for compliance with all applicable requirements.
3. ARB will prepare a notice indicating intent to approve or disapprove the plan (or portions thereof). ARB will provide its staff report and recommendations on each plan to the affected district(s), as soon as available but no less than 30 days before the Board hearing.

Board Action

1. All actions of the ARB to approve, revise and approve, or disapprove district attainment plans will be taken at a noticed public hearing.
2. The Board will approve acceptable plan portions by resolution.

3. The Board will identify plan deficiencies by resolution and transmit those findings to the district. Concurrently, the Board will notice its intent to amend the plan within 90 days, if deficiencies are not corrected.
4. The district shall correct the deficiencies identified by the Board and submit its revised plan for approval. The district may request initiation of Conflict-Resolution procedures in lieu of revising its plan, if it does not concur with the Board's findings.

Conflict-Resolution

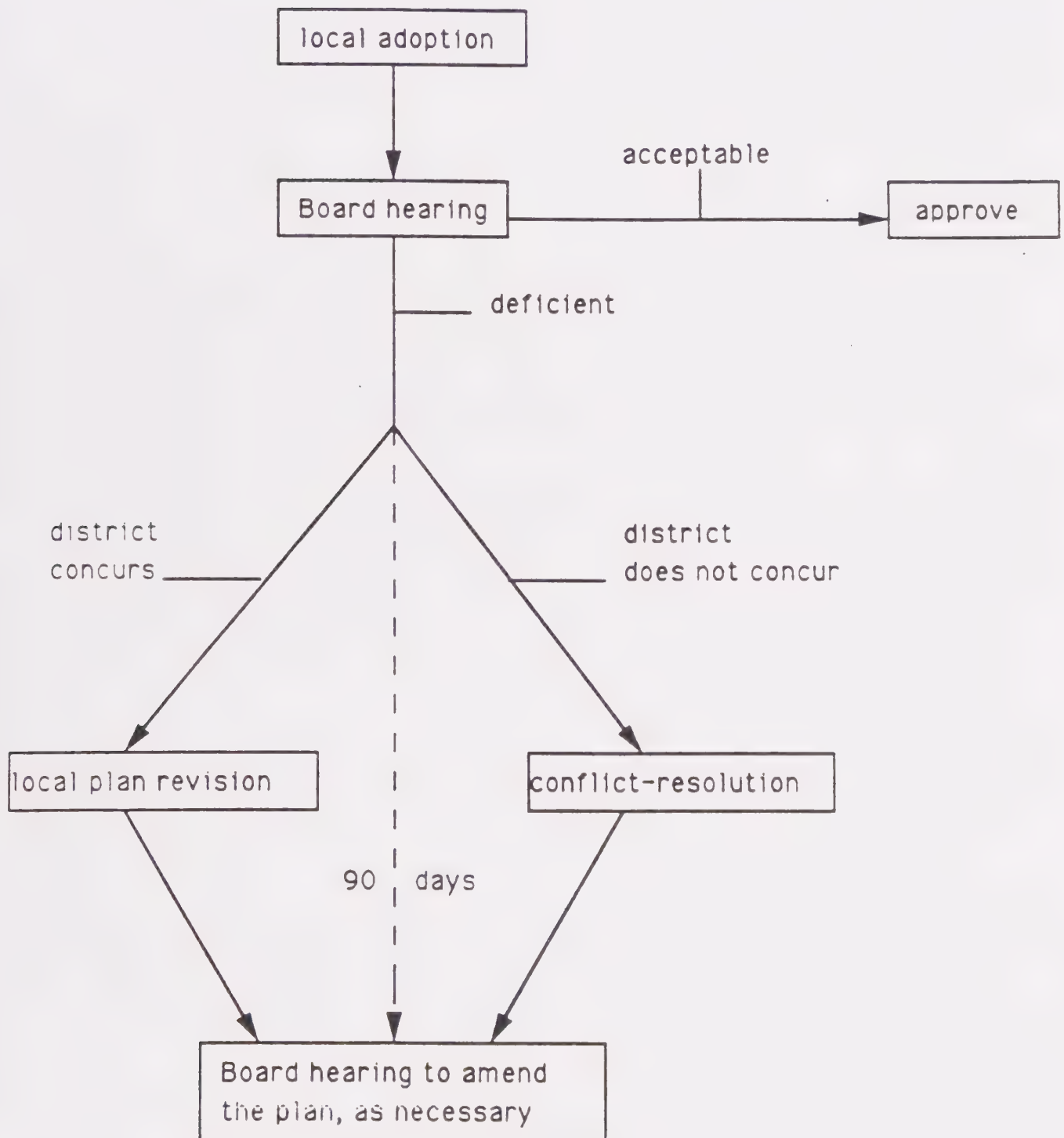
1. Upon district request, the Board will designate a conflict-resolution committee.
2. The committee shall consist of representatives of the affected district and ARB, and may include other parties (e.g., COG's, transportation agencies) upon mutual consent.
3. The committee will meet and confer within 30 days of the Board's finding of deficiencies and shall report its conclusions back to the Board within 60 days.
4. The Board will give substantial consideration to consensus recommendations of the conflict resolution committee in determining whether a second opportunity to amend the plan locally should be provided and, if not, what modifications should be made by the Board.

Attachment

APPLICABLE SECTIONS OF THE CALIFORNIA CLEAN AIR ACT

- 41503.2 (a) If the state board concludes that a district's plan does not meet the requirements of Section 41503, the state board shall notify the district of all deficiencies in writing. The district shall correct the deficiencies . . . and shall submit its revised plan to the state board for approval.
- (b) If the district does not concur . . . or the state board determines that the district's plan revisions are inadequate . . . the state board and the district shall attempt to resolve the differences within three months of the board's disapproval. The state board and the districts shall develop a uniform conflict resolution procedure . . . prior to any district's submittal of its attainment plan to the state board.
- (c) If a conflict between the state board and district cannot be resolved, the state board shall take all of the following actions:
- (1) conduct a public hearing in the air basin . . .
 - (2) . . . provide 45-day written notice . . .
 - (3) . . . revise the district's plan as it finds and determines necessary.
- 41503.4 All actions of the state board to approve, revise and approve, or disapprove a district's attainment plan or plan revision shall be taken at a noticed public hearing.
- 41503.5 The state board shall ensure that a district's plan and plan revisions meet the requirements of this part and of Part 3 (commencing with Section 40000), and that every reasonable action is taken to achieve the state ambient air quality standards . . . by the earliest practicable date.

Flow Chart for Plan Approval



APPENDIX B
1991 BAY AREA AIR QUALITY ATTAINMENT PLAN
ARB ANALYSIS OF TRANSPORTATION CONTROL MEASURES
Volumes I & II (Appendix F)

INTRODUCTION

The Bay Area '91 Clean Air Plan (CAP) includes 23 transportation control measures (TCMs). This set of measures was developed by the Metropolitan Transportation Commission (MTC) and adopted with some modifications by the Bay Area Air Quality Management District. The plan as revised has not been adopted by MTC or the Association of Bay Area Governments (ABAG).

Two of the TCMs are scheduled for District adoption as new rules: TCM 2 (Employer-based Trip Reduction) and TCM 16 (Indirect Source Review). The other TCMs are to be implemented by other agencies.

Implementation of the adopted TCM program is divided into two phases. In general, Phase I measures are described with more specific detail, and include milestones, completion dates and funding commitments. Some measures lack information on project scope, baseline data, key assumptions, analysis methods and effects on travel.

Phase II measures are less specific. They generally describe the goals, target group, estimated costs and emission reductions of measures. Potential implementing actions by lead agencies are discussed, but there are no commitments for funding, timelines or milestones for monitoring. The project scope is incomplete, and the background data is often limited.

Pursuant to state law, district plans must evidence a substantial degree of specificity and commitment to implementation for all reasonably available measures. In essence: who is going to do what by when. For complex or multiyear projects, intermediate milestones for the planning cycle are also needed. Commitment is shown for TCMs 2 and 16 by District adoption of this plan and District authority to implement these two measures. Commitment to implement the remaining measures is less clear, and varies by measure.

In order to evaluate effectiveness of the plan as well as the individual TCMs, travel characteristics of the current transportation system as well as the individual TCMs should be identified. For transportation control measures, such indicators include the quantity of trips, vehicle miles traveled, location and duration of congestion, average vehicle occupancy during commute hours and the transportation system infrastructure. Forecasts of changes expected in each factor over time are needed to successfully track the implementation of the measures. Much of this information cannot be found in the plan.

Staff does not believe that the transportation control measures portion of the plan, as described in Appendices B and F, are adequate at this time to meet all of the requirements of the California Clean Air Act, and cannot

be unconditionally approved by the Air Resources Board. Needed additional information to be supplied for each measure, as well as the transportation system, is identified in the following section.

TRANSPORTATION CONTROL MEASURES

Descriptions of the transportation control measures in the Plan are included in Volume II (Appendix F). Volume II describes how the TCM plan was developed, linkages among the 23 measures, and information on each TCM regarding purpose, background, scope, travel market, costs, impacts, implementation and impediments to the plan.

The projected reductions in the baseline 1997 on-road vehicle emissions for ROG, NO_x and CO for Phases 1 and 2 are stated as a percentage reductions for each TCM. A technical report, **Transportation Control Measures for the San Francisco Bay Area: Analyses of Effectiveness and Costs** (October 1991), provided background information on modeling method, assumptions and findings for the Plan. The report, prepared by Greg Harvey and Betty Deakin for the BAAQMD, (Harvey-Deakin report) is cited as a reference in the ARB analysis.

Additional information is included in Volume I. Table 4: REDUCTION IN EMISSIONS AND VEHICLE TRAVEL FOR TCMs summarizes the projected changes in the percentage and tons/day of the criteria pollutant (RHC, NO_x, CO) and the travel indicators (vehicle trip, VMT). The projected 1997 on-road inventory includes: 137 tons/day (RHC), 222 tons/day (NO_x) and 1939 tons/day (CO).

Most TCM implementation plans are conceptual, and they do not contain enough specific information to be monitored. Exceptions to this general evaluation are the two District rules that are to be developed and adopted: TCM #2 and TCM #16. Commitments from participating agencies, including a scope of work, timelines, milestones and budgets to achieve the expected results need to be provided for most of the other measures.

A shortfall of \$500-\$600 million dollars per year to implement the Phase 2 programs is identified in the Revenue Measures summary of the TCM plan (page F-3). This is a substantial amount to be met by TCM #21. The Plan assumptions that the TCM program will be implemented are not supported by the existing revenues that have been identified to date.

Recent passage of the Federal Intermodal Surface Transportation Efficiency Act (ISTEA) has provided new flexibility in the use of revenues from the federal gas tax. The combination of new federal, state and local revenues need to be reexamined as funding sources for a revision of TCM #21. Local government sales tax measures and congestion management programs may also implement TCM activities.

Preparation of multimodal planning guidelines and lists of "Jump Start" projects for early transportation programing are opportunities to explore which TCMs may be funded with new state and federal revenues. ARB staff recommends that high priority be given these unfunded Phase 2 projects in

these decisions. Funding commitments should be reflected in the upcoming state and regional Transportation Improvements Programs (TIPs).

Additional ARB staff comments regarding the individual TCMs have been grouped in the following categories:

- o Employer Based Trip Reduction
- o Mobility Improvements
- o Traffic Operations System (TOS)
- o User Incentives
- o Indirect Source Review
- o Implementation Support
- o Revenue Measures
- o Pricing Measures
- o Intermittent Measures

Specific comments on these measures are as follows:

EMPLOYER-BASED TRIP REDUCTION

TCM #1 Expand Employer Assistance Programs

TCM #1 includes eight public sector support activities to expand and enhance existing programs to assist employers in developing effective trip reduction programs for their employees, including FTCM 23. The projected emissions reductions are: 0.18% (RHC & NOx) and 0.17% (CO).

The TCM #1 activities meet the criteria of a reasonably available TCN that will increase the effectiveness of the TCM plan in the area of Employer-Based Trip Reduction programs. Funding for some expansion in TCM activities was included in the Bay Area RIDES 1991-92 work plan. The total annual costs are estimated at \$975,000 per year. However, it is unclear how the costs are related to specific objectives and funding sources. It is stated that the strong Caltrans' support of ridesharing is expected to continue. Motor Vehicle Registration sur charge authorized under AB 434 may be a potential source of funds.

No specific rules or ordinances are required for this measure, and therefore no additional legal authority is needed. Commitments by MTC, District, Caltrans and RIDES are needed regarding the ongoing work included in TCM #1, including coordination plan, work programs, funding sources, milestones, and monitoring schedule for tracking the effects of this measure.

ARB staff recommends that TCM #1 be approved, while concurrently recommending that additional information on the projected changes in actual numbers of vehicle trips, vehicle miles traveled and emission reductions be provided to supplement the percentage change data reported in the Harvey-Deakins report, pages A-1, B-1, C-1 and D-1.

TCM #2 Employer-Based Trip Reduction Rule

TCM #2 is projected reduce emissions by 3.57% (RHC), 3.67% (NOx) and 3.76% (CO) by the adoption of a BAAQMD rule that would affect 75% of the workforce and require employers to develop programs equivalent to \$3.00 daily parking charges with subsidies for ridesharing, transit and other alternatives to solo commuting.

Governmental administrative costs of \$5 million per year may be met by employer fees. Cities and counties that develop equivalent trip reduction ordinances may be designated to administer the plan. It is proposed that the rule development be integrated with the trip reduction/demand management element of local congestion management programs.

Clearly, TCM #2 is an ambitious measure, and staff believes that it will be effective in reducing emissions. However, additional information on the assumptions and methods used in calculating impacts should be included in the plan to document the projected effectiveness.

The actual measure will be designed in the district's rulemaking process. The plan does provide a clear commitment by the district to implement TCM #2, an action for which it has adequate authority. Future funding is assured because the District can levy fees necessary to implement the program.

ARB staff recommends that TCM #2 be fully approved, while concurrently recommending that additional information on the projected changes in actual numbers of vehicle trips, vehicle miles traveled (VMT) and emission reductions be provided to supplement the percentage changes reported in the Harvey-Deakin study (A-3, B-3, C-1, D-1).

MOBILITY IMPROVEMENTS

TCM #3 Improve Areawide Transit Service

TCM #3 is divided into funded (Phase 1) and unfunded (Phase 2) actions. Phase 1 includes continuation of post-earthquake BART service (FTCM 17b), extending Caltrain to Gilroy and expanding service from 54 to 66 trains per day (FTCM 19) and encouraging transit operators to do market analyses and to convert bus fleets to clean fuel vehicles. Projected emission reductions from Phase 1 are: 0.46% (RHC & NOx) and 0.44% (CO).

Unfunded Phase 2 activities are projected to yield additional emission reductions: 1.00% (RHC) and 0.90% (NOx & CO). Estimated annual costs of expansion of rail service (\$100 million) and bus service (\$140 million) do not have identified revenue sources for the expanded measure.

The cost estimates for Phase 2 include both the capital costs for rails and bus equipment and operating shortfalls. An increase of 33 percent in funding and ridership capacity is projected in the Harvey Deakin report (pages A-3,4; B-3,4,5; C-1, D-1).

TCM #3 is an ambitious measure, and ARB staff believes that it could provide significant emission reductions. However, additional information is needed to establish the degree of emission reduction and related impacts on regional mode split, vehicle trips, VMT and vehicle occupancy that are projected. Program activities in Phase 1 need to specify the lead agency, budget, timetable, milestones and expected effects on transit operations.

Preliminary ARB staff review of the 1992-2000 Short Range Transit Plans for transit operators indicates that current expansion plans for the regionwide bus fleet, after deducting planned bus replacements, is less than one percent. Therefore, further review of this objective is needed, in light of the additional flexibility for use of state and federal transportation funds that has been provided in recent legislation. The multimodal guidelines being developed should address transit spending priorities.

The Metropolitan Transportation Commission (MTC) support of transit expansion as a high priority for the Regional Transportation Plan (RTP) is encouraging. We recommend that the transit projects included in the State Transportation Improvement Program be identified for Phase 1 projects. The long range RTP plans for bus and rail service should be cited as Phase 2 assumptions.

The ARB staff recommends that this measure be conditionally approved, provided that MTC, county congestion management agencies, Caltrans and regional transit providers commit to an expeditious schedule to provide the following data regarding Phase 2:

- o Documentation regarding calculation of emission reduction impacts,
- o Clear commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and

- o A funding program that is adequate to implement the measure.

TCM #4 Expedite and Expand Regional Rail Agreement

TCM #4 would expand regional rail services in two phases. Phase 1 is the funded extension of BART service from Daly City to Coloma (FTCM 16) and it is projected to reduce emissions by 0.06% (RHC, NOx, CO). The funding sources, schedule and participating agencies are identified.

Volume I (page 16) and the Harvey-Deakin report (pages A-5, B-5, C-1, D-3) provide background information. The action plan for Phase 2 includes: four additional BART rail extensions, Caltrain extension into San Francisco, and a 12-mile/19 station extension of Tasman light rail in Santa Clara. These projects are jointly projected to reduce emissions by 0.80% (RHC, CO) and 0.76% (NOx). The total costs are not stated, but 80 percent of the funding is said to be available. Extra funds would be used to accelerate the construction schedule.

ARB staff believes that expansion of rail facilities in the Bay Area could be effective in reducing emissions. Additional information on the assumptions and methods used in calculating impacts on emissions and travel indicators affected by greater rail use (e.g., regional mode splits, vehicle trips, VMT, vehicle occupancy).

The plan also does not contain enough specific information on implementation steps so that the measure can be monitored. Additional information needs to be provided regarding the lead agencies, resource commitments, timelines, milestones, and projected ridership changes for both Phases 1 and 2. This information has been secured by District staff.

The ARB staff recommends that both Phases 1 and 2 be approved, provided that the MTC, Caltrans, and BART commit to an expeditious schedule to provide:

- o Documentation of project funding and schedules for Phases 1 and 2
- o Additional details that clarify the target performance goals

TCM #5 Improve Access to Rail and Ferries

Existing funding sources are expected to provide an unstated amount of support to improve access to rail and ferries in connection with other TCM activities and projects. This Phase 1 of TCM #5 is projected to reduce emissions by 0.02% (RHC, NOx) and 0.03% (CO).

Phase 2 activities would include timed-transfer access to mass transit at an estimated total cost of \$50 million per year with a projected emission reduction of: 0.30% (RHC, NOx) and 0.25% (CO). (See Harvey-Deakin report, pages A-5, A-6, B-6, C-1, C-2, D-3.)

ARB staff believes that this measure could help increase the modal shifts and therefore reduce emission reductions from motor vehicles. There is, however, the potential for the "double-counting" of the emission reductions from access improvements funded as part of other TCM activities or programs. Additional information needs to be provided on the assumptions, calculation methods and projected impacts on emissions and related travel indicators (e.g., regional vehicle trips, VMT) to fully evaluate the proposed measure.

Work efforts by various transportation agencies that could contribute to the Phase 1 implementation are identified (page F-19). The plan does not contain enough specific information on what actually will be done so that the measure can be monitored. Additional information needs to be provided regarding the lead agencies, resource commitments, timelines, milestones, and projected ridership changes for both Phases 1 and 2.

The ARB staff recommends that this measure be conditionally approved, provided that MTC and all identified service providers commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Clear commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #6 Improve Intercity Rail Service

TCM #6 is projected to reduce emissions by 0.05% (RHC & NOx) and 0.04% (CO) in Phase I due to the initial intercity rail service of three daily roundtrips in the Auburn-Sacramento-San Jose Corridor (Federal TCM 18). The funding for rolling stock (over \$107.4 million) and operations (\$7 million) were available. The ridership in early 1992 has exceeded expected numbers.

Daily service is projected to expand to 10 roundtrips by 1999/2000 with an additional emission reduction of 0.04% (RHC & NOx) and 0.03% (CO). in Phase 2. This goal was based on the ARC 132 (Hannigan) Rail Corridor Upgrade Study. Institutional agreements and additional funding will be needed to reach this goal. The additional costs were not identified. (See pages A-6, B-6, C-2, D-4 of Harvey-Deakin report.)

ARB staff believes that expansion of intercity rail service to the Bay Area could be effective in reducing emissions. Additional information on the assumptions and methods used in calculating impacts on emissions and travel indicators affected by greater rail use (e.g. regional mode splits, vehicle trips, VMT, vehicle occupancy). Given the initial popularity of the service, the rate of ridership growth and emission reductions may prove to be underestimated.

As a minimum, it seems possible that the Phase 2 emission reductions are low, because they are not proportional to the increases in daily train trips.

The plan does not contain enough specific information on implementation steps so that the measure can be monitored. Additional information needs to be provided regarding the lead agencies, resource commitments, timelines, milestones, and projected ridership changes for both Phases 1 and 2.

The ARB staff recommends that Phase 1 be approved and that Phase 2 of this measure be conditionally approved, provided that MTC, Caltrans, rail transit providers, and any affected congestion management agencies commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Clear commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #7 Improve Ferry Service

TCM #7 is a measure with two phases. Phase 1 includes the funded projects to continue post-earthquake ferry service between Oakland/Alameda and San Francisco Ferry (Federal TCM 17) with an operating subsidy of \$750,000, and \$10 million is available in the 1994-97 period for Vallejo ferry improvements. The projected reductions in emissions from Phase 1 are 0.02% (RHC) and 0.01% (NOx & CO).

Phase 2 is projected to reduce emissions by another 0.03% (RHC & NOx) and 0.02% (CO). At an additional cost of \$10 million per year, new ferry service would be provided between San Francisco and Berkeley/Richmond, and between the Oakland and San Francisco airports. Feeder bus service to ferries would be included. (See TCM #5) Privately-operated ferries servicing Port Sonoma and Harbor Bay Isle are also being considered. (See Harvey-Deakin report, pages A-6, A-7, B-7, C-2, D-4.)

The implementation section provides useful detail on costs and funding arrangements in Phase 1. An increase in annual ridership from 2.7 to 4.0 million person-trips per year by the mid-1990s, given ferry service improvements, is cited from a MTC study for the SB 2169 (Kopp) Long Range Ferry Service Plan.

ARB staff believes that expansion of ferry services could be effective in reducing emissions. The plan does not provide enough information on the assumptions and methods used in calculating impacts on emissions and regional travel indicators affected by greater ferry use (e.g., regional mode splits, vehicle trips, VMT, vehicle occupancy), so more information needs to be provided.

The ARB staff recommends that Phase 1 of this measure be approved, and that Phase 2 be conditionally approved provided that MTC, ferry operators and any affected congestion management agencies commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement Phase 2 projects,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #8 Construct Carpool/Express Buslanes on Freeways

TCM #8 is a two-phase expansion of the existing 80-lane-mile HOV lane system in the Bay Area. Construction of 220 directional HOV lane-miles (Federal TCM 20) is to be financed from the \$500 million in funding for HOV projects included in the 1988 State Transportation Improvement Program (STIP). This expansion is projected to reduce emissions by 0.23% (RHC), 0.22% (NOx), and 0.20% (CO).

Phase 2 is projected to reduce emissions by 0.41% (RHC), 0.40% (NOx) and 0.38% (CO) with the construction of another 190 HOV lane-miles that are proposed in the 2005 HOV Lane Master Plan. MTC is to work with Caltrans in the design and funding of HOV facilities, study HOV support facility needs, and seek funding for additional express bus service in HOV lane corridors. The total costs, funding sources and work plans to implement these Phase 2 projects are not stated in the plan. (See Harvey-Deakin report, pages A-7, A-8, B-7, C-2, D-4.)

ARB staff believes that expansion of the HOV facilities could be effective in reducing emissions. HOV lanes can provide time savings incentives to users that would enhance the effectiveness of the TCM plan as a whole. However, ARB staff questions whether all routes where HOV lanes would be feasible strategies to reduce congestion and emissions have been included in the existing masterplan. For example, over half of the HOV system is to be located in Santa Clara County.

The August 1990 report to MTC, **2005 HOV Program Prioritization**, outlined an action program that could result in completing the remaining 190 lane-miles in the master plan by 2005. ARB staff believes that each of the 16 unfunded HOV projects should be reviewed as recommended with special attention to the following projects:

- o CC-80 between Willow and the Carquinez Bridge in Contra Costa County
- o SCL-Capitol Expressway between Almaden and I-680 in Santa Clara County
- o SCL-237 between Route 85 and U.S. 101 in Santa Clara County
- o SCL-Almaden Expressway between Haney Road and Ironwood in Santa Clara County
- o CC-4 between Route 242 and Hillcrest in Contra Costa County
- o SON-101 between Marin County line and Washington in Sonoma County
- o CC-680 between Route 4 and the Benecia Bridge in Contra Costa County
- o ALA-92 from Clearwater to I-880 in Alameda County
- o SCL/ALA-680 from Montague to Route 238 in Alameda County
- o SCL-87 from I-280 to US-101 in Santa Clara County

In addition, ARB staff recommends that all capacity-increasing construction projects be evaluated as possible additions to the 2005 HOV Lane Master Plan to provide a more comprehensive HOV system. Funding opportunities to identify and construct new HOV lanes in the system may now be available under the provisions of new State and Federal legislation regarding uses of gas tax revenues. Revisions in the criteria used in selecting priority projects for the 1992 STIP should be considered to meet the TCM implementation schedules.

The plan does not contain enough specific information on implementation steps so that the measure can be fully monitored. Additional information needs to be provided regarding the lead agencies, resource commitments, timelines, milestones, and projected changes in HOV use due to funded and unfunded projects completion.

The plan also fails to provide enough information on the assumptions and methods used in calculating impacts on emissions and regional travel indicators affected by the expanded HOV system (e.g. regional mode splits, vehicle trips, VMT, vehicle occupancy), so more information needs to be provided.

The ARB staff recommends that this measure be conditionally approved, provided that MTC, Caltrans, and county congestion management agencies commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #9 Improve Bicycle Access and Facilities

TCM #9 includes programs to encourage bicycle use for short trips of various types. A target was added by the District to the MTC-adopted measure that set the goal of increasing the bicycle mode share during commute hours from 1.3% in 1980 to 3.0% by 1997.

The projected emission reduction for Phase 1 is 0.01% (RHC, NOx, CO), based on continued expenditure of \$3 million per year for bikeway projects in the region. New guidelines are to be drafted by MTC for local applications for these funds for Fiscal Year 1993-94.

Unfunded bicycle projects in Phase 2 are projected to reduce emissions by 0.02% (RHC & NOx) and 0.03% (CO) at an estimated cost of \$5 million per year. Proposed funding sources included new State revenues and coordination of plans with Caltrans and transit operators to include provisions for bicycles. (See Volume II, and Harvey-Deakin report pages A-9, A-16, B-7, B-8, C-2, D-5.)

Information is lacking on how the 3% goal for bicycle use is projected to affect future predictions of emission reduction, VMT and vehicle trips. A schedule and budget for implementation by responsible agencies is needed. Other sources of revenue should be discussed as possible funding sources.

The conceptual target for 3% peak period bicycle trips is ambitious, and ARB staff believes that increases in bicycle use could be effective in reducing emissions. The plan does not provide enough information on the assumptions and methods used in calculating impacts on emissions and regional travel indicators affected by more bicycle use (e.g., regional mode splits, vehicle trips, VMT), so more information needs to be provided.

The plan does not contain enough specific information on implementation steps so that the measure can be monitored. Additional information needs to be provided regarding the lead agencies, resource commitments, timelines, milestones, and projected ridership changes for both Phases 1 and 2.

The ARB staff recommends that Phase 1 of this measure be approved and Phase 2 be conditionally approved, provided that MTC, Caltrans, and county congestion management agencies commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #10 Improve Youth Transportation

TCM #10 is designed to reduce travel and emissions related to the transportation of children and youth. School trips account for an estimated 2%-3% of weekday vehicle miles traveled in the Bay Area. Transportation of children and youth, outside of school hours, is also addressed.

TCM #10 is projected to reduce emissions by: 0.14% (RHC & NOx) and 0.16% (CO) at a cost of \$11 million dollars annually. Projects to attain these reductions were placed in Phase 2 because no funding was identified. Projects include: \$5 million for discount transit tickets, \$5 million for school bus service and \$1 million to promote ridesharing among students.

Information is lacking on how the measure is projected to affect future predictions of mode split, vehicle trips, VMT and average vehicle occupancy. A schedule and budget for implementation by responsible agencies is needed.

This is a modest supporting measure that ARB staff believes would help decrease the emissions from vehicle trips by parents or youthful drivers for transportation to school and after-school activities due to more schoolbus and public transit ridership. There is, however, a potential problem with the "double-counting" of emission reductions if these service improvements are being funded as part of another TCM program or activity. (See TCM #13)

Additional information needs to be provided on the assumptions, calculation methods and projected impacts on emissions and related travel indicators (e.g. regional mode splits, vehicle trips, VMT, vehicle occupancy) to fully evaluate the proposed measure.

The plan does not contain information on specific proposals with an action plan that can be monitored. No funding sources are identified beyond what may be provided by new State legislation. Recent passage of State and Federal gas tax legislation that allows more local discretion may provide a source of funding for this measure. Additional information needs to be provided regarding the lead agencies, resource commitments, timelines, milestones, and projected outcomes of this measure.

The ARB staff recommends that this measure be conditionally approved, provided that MTC, District, RIDES and transit providers commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TRAFFIC OPERATIONS SYSTEMS

TCM #11 Install Freeway Travel Operations System (TOS)

TCM #11 will reduce congestion-related emissions by improving the flow of traffic on regional freeways. Many traffic operational improvements are to be included in Caltrans Traffic Operations System (TOS).

Phase 1 implementation of the TOS Segment I on freeways near the Bay Bridge are predicted to reduce emission by: 0.42% (RHC), 0.35% (NOx) and 0.65% (CO). The cost, schedule and funding source for Phase I (FTCM 26) are stated.

Phase 2 of the Caltrans TOS is predicted to reduce emissions by 1.40% (RHC), 1.10% (NOx) and 1.80% (CO). The plan notes that small increases in vehicle trips (0.10%) and VMT (0.15%) are expected from the fully completed 216-mile TOS system when it is in full operation. (See pages A-11, A-12, B-10, B-11, C-3, D-6, D-7 of the Harvey-Deakin report.)

This is an ambitious measure to improve traffic flow on freeways and arterials in the Bay Area. ARB staff believe that reducing congestion by providing reducing hours of delay due to incidents and excess demand can both have emission benefits. Recent ARB research has provided new information regarding the relationships between vehicle accelerations and emission rates. Further research on how total emissions from metered ramps and mainline freeway operations is underway, so it is possible that emission reductions from this measure may need revision at a future update of the TCM plan.

Additional information should be provided on the assumptions, calculation methods and projected impacts on emissions and related travel indicators (e.g. regional mode splits, vehicle trips, VMT, vehicle occupancy) to fully evaluate the effectiveness of the proposed measure.

The plan does not contain information on a specific action plan that can be monitored. Caltrans is identified as the funding source, and MTC is to cooperate in developing the TOS ramp metering component and seeking funding to install electronic toll collection on the Bay Bridge (See TCM #20). More complete information needs to be provided regarding the funding sources, resource commitments, timelines, milestones, and completion dates for TCM #11.

The ARB staff recommends that this measure be conditionally approved, provided that MTC, Caltrans and any county congestion management agencies that are affected commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #12 Improve Arterial Traffic Management

TCM #12 includes improvements to arterial travel flow due to signal timing programs, bus flow improvements and Caltrans' "smart streets" programs. This measure continues an ongoing program to extend retiming programs to new traffic signals (FTCM #24) and to maintain them in good operating condition (FTCM #25). The use of arterials as reliever routes, or "smart streets" is related to the TOS operating system (see TCM #12).

This measure is projected to reduce emissions by 0.20% (RHC), 0.25% (NO_x) and 0.30% (CO) in Phase 1. When funded, Phase 2 actions are predicted to further reduce emissions by: 0.23% (RHC), 0.52% (NO_x) and 0.33% (CO). The completed measure is also predicted to result in small increases in vehicle trips (0.03%) and VMT (0.02%). Annual costs of this ongoing TCM program are estimated at \$6 million per year, and the plan is unclear regarding when the costs and benefits are projected to occur. (See pages A-13, B-12, B-13, C-3, D-7 of the Harvey-Deakin report.)

ARB staff believe that improvements to arterial traffic flow can provide some emission reduction benefits with little creation of new travel demand when the improvements are made in areas where land development has already occurred. Improvements that favor the flow of buses, such as bus/HOV lanes, bus traffic signal preemption and relocation of bus stops, would have the highest benefit.

More detailed information needs to be provided on the physical facilities and the measure's emissions and related travel indicators (e.g., regional vehicle trips, VMT, vehicle speeds) to fully evaluate the effectiveness of the proposed measure.

The plan contains useful detail on the signal retiming program scope, funding source and schedule. More complete information needs to be provided regarding the funding sources, resource commitments, timelines, milestones, and completion dates for TCM #12.

The ARB staff recommends that Phase 1 of this measure be approved and Phase 2 be conditionally approved, provided that MTC, Caltrans and any county congestion management agencies that are affected commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

USER INCENTIVES

TCM #13 Transit Use Incentives

TCM #13 consolidates and expands upon the transit use incentives included elsewhere in the TCM plan. Proposed projects include: selective fare reductions, an expanded ticket distributions system, improved coordination of fares among transit operations (FTCM #21) and a regional toll-free transit information number.

Phase 1 actions appear to be funded as part of the MTC work program. The costs are not defined, but the emission reductions predicted are: 0.11% (RHC & NO_x) and 0.09% (CO). When funded, Phase 2 activities are predicted to further reduce emissions by: 0.21% (RHC & NO_x) and 0.22% (CO).

Costs for the full program are estimated at \$18 million dollars per year. Projects would include: \$10 million for selective fare subsidies; \$5 million for feeder bus service to rail and ferries and \$3 million for "transit stores" based on the Berkeley TRIP model. The plan states that such subsidies would help address the "equity" concerns regarding revenue generating (TCM #21) and pricing measures (TCM #22) included in the TCM plan. (See Volume II and Harvey-Deakin report, pages A-14, B-14, B-15, C-3, C-4, D-7, D-8.)

This measure would expand transit subsidies somewhat beyond those proposed elsewhere in the TCM plan. The ARB staff believes that financial incentives can provide motivation to change travel modes, and thus help reduce vehicle emissions. However, because of the overlap between TCM #13 and other TCM activities, care should be taken to avoid "double-counting" of the benefits and costs of programs, such as: youth and children's transit fares subsidies (TCM #10), feeder buses to rail and ferries (TCM #5), and "transit stores" that are part of an employer trip reduction plan (TCM #1, TCM #2).

Additional information needs to be provided on how the projected emission reductions have been calculated before the effectiveness of this measure can be fully evaluated. This would include: the assumptions, calculation methods and projected effects of Phases 1 and 2 on vehicle emissions and related travel indicators (e.g. regional mode splits, vehicle trips, VMT, vehicle occupancy and transit ridership on services affected by the TCM #13 programs).

The plan contains general descriptions of the activities to be included, and additional detail on the 1991 work programs and budget items of agencies that are participating in Phase 1 activities (MTC, RIDES, transit operators). The funding included \$80,000 in State transportation funds and transit operator support.

The proposed Phase 2 activities are not defined in a manner that can be monitored for performance, and they are contingent on future funding from revenue sources that were unavailable when the measure was drafted (TCM #21). New revenue sources have been provided by State and Federal legislation, and we recommend that they be evaluated as possible ways of

funding the transit use incentives in a timely fashion. More complete information needs to be provided for Phase 2 actions regarding the funding sources, resource commitments, timelines, milestones, and expected completion dates.

The ARB staff recommends that this measure be conditionally approved, provided that MTC, Caltrans and any county congestion management agencies that are affected commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #14 Vanpool Liability Insurance

TCM #14 would seek to increase the rates of vanpool formation and retention by offering a publicly-financed or subsidized vanpool liability insurance program. Vanpools currently serve less than one percent of Bay Area commuters, and liability insurance costs of \$2,500-\$3,000 per year appear to be a factor in the declining rate of growth for this transportation mode.

Phase I consists of a RIDES study to determine how this program can stimulate growth of vanpooling in the Bay Area. It is to be conducted in FY 1991-92 within their funded work program.

Implementation in Phase 2 is contingent on securing funding for the program. Estimated costs are \$2.1 million per year for full public funding, but the actual costs would depend on the scope of the program and the level of subsidy that was provided. The emissions reductions predicted from establishing a vanpool liability insurance program are: 0.02% (RHC & NOx) and 0.01% (CO). (See Volume II and Harvey-Deakin report, pages A-15, B-15, C-4, D-8.)

TCM #14 lacks information on the assumptions, data and methods used to calculate costs and effectiveness of this measure. As with other support measures, it is important to avoid "double-counting" of the vanpool emission reductions. Information is also lacking on projected effects on future mode split, vehicle trips, VMT and average vehicle occupancy.

If the Phase 1 study findings are positive, the funding opportunities though new and existing revenue sources should be reexamined. For example, transportation management associations (TMAs) might be asked to participate in a joint benefit program of this nature. Local discretion has been increased regarding uses of gas tax and vehicle registration surcharge fees.

This measure would remove or reduce an identified disincentive to vanpool use, and the ARB staff believes that the cost reduction would add motivation for greater vanpool use, and thus help reduce vehicle emissions. However, because of the overlap between TCM #14 and other TCMs that include vanpool elements, care should be taken to avoid "double-counting" of the benefits and costs of this program. Examples include measures to reduce single-occupant vehicle trips through employer trip reduction plans (TCM #1, TCM #2).

Additional information needs to be provided on how the projected emission reductions have been calculated before the effectiveness of this measure can be fully evaluated. This would include: the assumptions, calculation methods and projected effects of Phase 2 implementation on vehicle emissions and related travel indicators (e.g. regional mode splits, vehicle trips, VMT, vehicle occupancy and future vanpool numbers and ridership).

The measure is not defined in a manner that can be monitored for performance, and more complete information needs to be provided as the Phase 2 program is developed regarding the funding sources, resource commitments,

timelines, milestones, and expected completion dates. We realize that funding has not yet been identified, and implementation is contingent on securing funds from revenue sources that were unavailable when the measure was drafted (TCM #21). New revenues, provided by recent State and Federal legislation, will now need to be evaluated as possible ways of funding a lower cost insurance program. Another funding source might be a jointly financed program with participation by transportation management organizations, as a benefit for employer members.

The ARB staff recommends that this measure be fully conditionally approved, provided that MTC, RIDES and the District commit to an expeditious schedule to provide:

- o Full documentation regarding calculation of emission reduction impacts,
- o Clear commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure

TCM #15 Provide Carpool Incentives

TCM #15 would support legislation to increase the Federal tax deductions for employees of transit and ridesharing subsidies, and to change state and federal tax policies that allow employers to deduct the costs of providing free or subsidized employee parking a business expense. No costs or emission reduction benefits are identified for these Phase 1 activities that are to be included in the funded MTC and District work programs.

Future Phase 2 projects of this measure include both private employer incentive programs and a new regional carpool subsidy program to be designed by MTC and RIDES. Employers would pay cash incentives to employees in the private plans (See TCM #1, TCM #2), while the "mobility package" revenues expected from TCM #21 are proposed as the funding source for the RIDES carpool subsidy program. Costs are not given because they would vary by the types of subsidy programs what were developed. However, the Phase 2 emission reductions are projected as 0.20% (RHC & CO) and 0.30% (NOx). (See Volume II and Harvey-Deakin report, pages A-15, B-15, C-4, D-8, D-9.)

This support measure contains both public and private subsidy programs, and it is unclear if any separation has been made in calculations of the future emission reduction effects. The ARB staff believes that financial incentive programs can encourage mode switching, and thus reduce vehicle emissions. Care must be taken to avoid "double-counting" of emissions where TCM plan objectives overlap. This type of confusion may have occurred in this measure.

Additional information needs to be provided regarding the assumptions, data and methods used to calculate costs and effectiveness of this measure. Information is also needed regarding the projected effects on future mode split, vehicle trips, VMT, vehicle occupancy and projected changes in the number of carpools and carpool person-trips.

The plan does not define the Phase 2 measure in a way that can be monitored for measure implementation. More information needs to be provided on the Phase 2 program scope and implementation plans for the two subsidy programs. (e.g., activity schedule, lead agencies, timetable, milestones, costs and revenue sources). Funding options for the regional carpool subsidies need to be reexamined in light of current State and Federal programs. Local discretion has also been increased regarding uses of gas tax and vehicle registration surcharge fees.

The ARB staff recommends that this measure be conditionally approved, provided that MTC, RIDES and the District commit to an expeditious schedule to provide:

- o Full documentation regarding calculation of emission reduction impacts,
- o Clear commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

INDIRECT SOURCE REVIEW

TCM #16 Indirect Source Control Program

TCM #16 includes the adoption of District rules to regulate new and existing development. Non-work trips are the stated target for the measure.

The initial rule that will affect only new and modified land development is projected to reduce emissions by 0.7% by 1997. Full implementation of TCM #16 will include a second rule that affects existing land uses as well, and the long-term projections of reduction in vehicle miles traveled (VMT) are stated to be as much as 10 percent by 2005 or 2010 with similar projections made for emission reductions (RHC, NOx, CO). (See Volume II and the Harvey-Deakin report, pages A-16, B-16, C-4 and D-9.)

Clearly, TCM #16 is an ambitious measure, and ARB staff believes that it will be effective in reducing emissions. However, additional information on the assumptions and methods used in calculating impacts must be provided for review to document the projected effectiveness.

The plan states that the TCM #16 emission reduction projections will not overlap with reductions projected for high densities near transit (TCM #18). Similarly, the focus on non-work trips appears to be taken to avoid overlap with TCM #2, the Employer Trip Reduction Rule. To the degree that home-work trips are made by persons working for small firms that are not covered by TCM #2, some underestimation of trips diverted from this employee subgroup could occur in projecting future emission reductions.

The plan does not contain sufficient information to fully evaluate the scope of the rule to be developed. Given that the actual measure will be designed in the district's rulemaking process, it is not necessary to resolve this issue in the plan itself. The plan does provide a clear commitment by the district to implement TCM #16 by the adoption of rules to reduce the vehicle emissions impacts from new and existing land uses, an action for which it has adequate authority. Future funding is assured because the District can levy fees necessary to implement the program.

ARB staff recommends that TCM #16 be approved. The scope and projected emission reductions will be refined in the rule adoption process.

IMPLEMENTATION SUPPORT

TCM #17 Conduct Public Education

The purpose of this measure is to inform people regarding the current status of air quality in the Bay Area and inform them on individual actions to better air quality.

No additional emission reduction credit is claimed for this support program. The BAAQMD Public Outreach Steering Committee will help develop and implement an ongoing public education program throughout this plan.

The initial costs of this campaign are \$250,000, and this expense was funded by an EPA grant. The BAAQMD is seeking sources of funds to continue and expand the program.

Information is lacking on the final scope of the continuing public education program with milestones and budget.

ARB staff recommends that Phase 1 of this measure be approved and Phase 2 be conditionally approved, while concurrently recommending that additional information be provided to fully document the future program objectives, schedule and budget for the District program to implement the public education requirements of the Act.

TCM #18 Zoning for High Densities Near Transit Stations

TCM #18 is designed to reduce vehicle trips and increase transit ridership by promoting high density, mixed-use development in the area of transit stations. The targeted areas are located around the rail extensions included in TCM #4, Expedite and Expand Regional Rail Agreement.

Emission reductions are projected to be reduced by 0.05% (RHC, NOx, CO) in Phase 2, and annual costs of \$500,000 are estimated to prepare site plans for transit station.

Phase 1 activities would take place within existing budgets, including: the evaluation of transit-oriented development patterns for the Bay Area for the Regional Transportation Plan (MTC), seeking of funds for preparation of specific area plans for transit stations (MTC, transit agencies) and cities and counties will be encouraged to plan for high density, mixed-use development near transit by the District to implement TCM #18, as well as TCM #16 (indirect source review) and TCM #19 (air quality elements). (See Volume II and Harvey-Deakin report, pages A-17, B-16, B-17, C-4, D-9.)

The plan bases the emission reduction on obtaining extra funding needed to prepare site plans for transit station development. A decrease in vehicle trips is expected to occur that is beyond the scope of related TCMs in the plan. ARB staff agrees with the conclusion that some increase in TCM plan effectiveness is reasonable, due to this measure. However, additional information is needed for full review of the emission reductions and overall TCM plan impacts.

The ARB staff recommends that this measure be conditionally approved, provided that the MTC, District and transit agencies commit to an expeditious schedule to provide:

- o Documentation regarding calculation of emission reduction impacts,
- o Commitment by participating agencies to implement the measure,
- o Additional data needed to clarify when the measure will be implemented,
- o Additional details that define the target performance goals, and
- o A funding program that is adequate to implement the measure.

TCM #19 Air Quality Element for General Plans

TCM #19 encourages all cities and counties to include an Air Quality Element in their General Plan to ensure that air quality issues are integrated into lower planning and decision-making.

This support measure would expand the District efforts to have local governments in the Bay Area adopt these elements which began in 1986. District efforts include revision of existing guidelines, the support of state legislation to mandate Air Quality Elements in general plans and expanded assistance to cities and counties in preparing the elements. The adoption of an element will be a condition of delegation for administration of the future indirect source rules (TCM #16). (See Volume II.)

ARB staff commends that District for the leadership that it has shown in providing leadership in developing this form of local support by cities and counties. The plan points out the beneficial effects of having an adopted air quality element in General Plans in the promotion of sound planning and policies at the local level, and by supporting the implementation of other TCMs in the Clean Air Plan. ARB staff agrees with this assessment. The District experience in promoting this approach will produce information of value to other districts, and it is recommended that progress reports be made on this measure.

ARB staff recommends that TCM #19 be accepted as an uncredited measure in support of the Act.

TCM #20 Conduct Demonstration Programs

TCM #20 will provide demonstration programs and studies to encourage innovative approaches to reducing vehicle travel and emissions. Topics listed as examples include: telecommuting, congestion pricing/electronic license plate evaluation and electric or natural gas carpools.

The scope of these activities will depend on available funding. The estimated costs are \$500,000 per year. No additional emission reduction credit is claimed for these small-scale projects.

Additional detail on how these activities will be included in the work programs of participating agencies would be desirable. Timelines, budgets and work products for adopted studies and demonstrations should be provided.

ARB staff recommends that TCM #20 be accepted as an uncredited measure in support of the Act, while concurrently recommending that additional information be provided to fully document the assumptions and experience in implementing the demonstration projects that are included in the measure.

REVENUE MEASURES

TCM #21 Implement Revenue Measures

TCM # 21 is designed to secure the additional revenue needed to fully fund the mobility improvement measures in the TCM plan. Added revenues of \$500-\$600 million per year are needed to meet this funding shortfall. (See Volume II; Volume I, page 19; and the Harvey-Deakin report, pages A-19, B-17, B-18, C-4, D-10.)

Three of the five revenue measures have been approved. These Phase 1 elements include:

- 1) an increase of \$.09 per gallon in the State gasoline tax,
- 2) an increase to \$1.00 for all bridge tolls, and
- 3) passage of AB 434 authorizing vehicle registration fee increases of up to \$4 per vehicle

Action has not been taken on legislation to increase bridge tolls to \$2.00. Legislation to further increase gasoline prices by \$.14 per gallon in the region seems unlikely to be approved.

TCM #21 is a critical measure in determining the success of the TCM program as a whole. The implementation of many other measures is contingent on new revenues. The \$.14 regional gas tax, or some alternative source is projected to raise \$420 million per year to meet the TCM funding shortfall.

We recommend that this measure be revised to reflect the amount of new revenues now available for Bay Area projects due to passage of the first three funding proposals. New Federal funding is also available. The recent passage of the **Intermodal Surface Transportation Efficiency Act (ISTEA)** has provided new flexibility in use of future Federal gas tax revenues, and this revenue source should also be included in reviewing this measure. Given these laws, TCM #21 could logically be recast as a commitment to apply new state and federal monies to help implement unfunded measures.

A second concern is the potential for the "double-counting" of the emissions reductions. More information on the assumptions, data and methods used in the calculation of the emission reductions need to be provided for full review of the emission reductions claimed for these revenue measures.

The ARB staff recommends that this measure not be approved, until it has been revised to reflect recent changes in state and federal law.

PRICING MEASURES

TCM #22 Implement Market-Based Pricing Measures

TCM #22 is a package of pricing measures that are intended to reduce motor vehicle emissions and traffic congestion by increasing the cost of driving significantly. An estimated \$3.3 billion dollars per year would be raised if all assumed pricing proposals were to be adopted. These user costs could be used to fund improvements in transit and other TCMs to meet concerns over the negative impacts on low income travelers ("equity issue") or could be rebated to Bay area residents to mitigate adverse economic impacts of pricing.

This is the most ambitious measure in the TCM plan, and it is projected to have large impacts on vehicle use and emissions when implemented. TCM #22 is projected to achieve a 14.6% reduction in motor vehicle trips and a 13.7% decrease in vehicle miles travelled (VMT), as compared to baseline levels projected by traffic models for the year 2000. The projected emission reductions are: 20.6% (RHC), 15.5% (NOx), and 22.5% (CO).

The emission reductions assumptions in the plan are based on the impact of the increased costs alone. Additional benefits that would be realized if the new revenues supported other parts of the TCM plan are not counted. The plan estimates the following revenue would be generated from the measure:

- 21a. Smog-Based Vehicle Registration Fees...Would raise \$500 million per year based on an average \$125 fee per vehicle
- 21b. Regionwide Freeway and Arterial Congestion Pricing...Would raise \$354 million per year at \$.10 per mile (\$90 per vehicle)
- 21c. Regionwide Non-Work Parking Charge of \$0.60 per Hour...Would raise \$690 million year with \$3.00 daily cap in low density areas
- 21d. Gas Tax Increase of \$2 per Gallon...Would raise \$1.8 billion per year (\$450 per vehicle)
- 21e. Regionwide Worksite Parking Charges of \$3.00 per Day...This charge is part of TCM #2, so no added revenue or emissions occur

Financial disincentives are powerful motivation to consider mode changes, if reasonable alternatives are available. The ARB staff believes that the degree of change in travel habits due to pricing appears reasonable, but that the likelihood of passing the full range of pricing programs grouped in this measure is low.

The description of the MTC and District activities during Phase 1 does not contain specific schedules, budgets or milestones that can be monitored for performance. Additional information needs to be provided on any work programs to develop legislation, seek public support and design project applications of the five pricing strategies.

The plan lacks a detailed plan for developing support for legislation and for the implementation of these measures, including funding commitments, milestones, and phased implementation. Although there is a great deal of support from Bay Area business associations and environmental organizations for these pricing measures, opposition is expected to any action that would substantially increase the cost of owning and operating an automobile, especially from low income groups. ARB staff notes that this issue is addressed in the USER INCENTIVES measures to some degree (TCM #13, TCM #15).

The plan states that the new fees would be implemented in stages, such as TCM #21 as an initial objective. Therefore, there appears to be some overlap in the emission reduction estimates that needs to be addressed. The funding shortfall that TCM #21 addresses could be met in this manner, because TCM #22 would use the revenues to fund TCMs with the greatest air quality benefits, and to provide a fund or programs to reduce impacts on low income households (e.g. subsidized transit passes (TCM #13), improved transit service (TCM #3, TCM #5), and income tax credits).

Given the need for additional legal authority for most of these measures, the ARB staff can not recommend that the emission reductions associated with this measure, or its effect on vehicular occupancy, be approved for inclusion in the plan. Staff concurs that pursuit of this measure is very worthwhile, and recommends that MTC and the district develop a work plan to pursue the needed legal authority, and include a commitments in the plan to execute this work plan.

INTERMITTENT MEASURES

TCM #23 Ozone Excess "No Drive Days" (Voluntary)

TCM #23 is a voluntary, intermittent program to encourage drivers to eliminate unnecessary trips, use alternative modes or chain trips on high ozone days. It is related to CM #G1, Citizen Postponement of Discretionary Activities and TCM #17, Enhance Public Education.

The initial experience with this program in September 1991 suggested that it could have high potential on high ozone days. If a 5% compliance rate could be achieved, emission reductions are projected of 7 tons/day RHC and 11 tons/day NOx. No enforcement or monitoring methods are available and no emission reduction credit is claimed in the TCM plan.

ARB staff recommends that TCM #23 be accepted as an uncredited measure in support of the Act, while concurrently recommending that additional information be provided to fully document the District assumptions and experience in implementing this intermittent, voluntary program.



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